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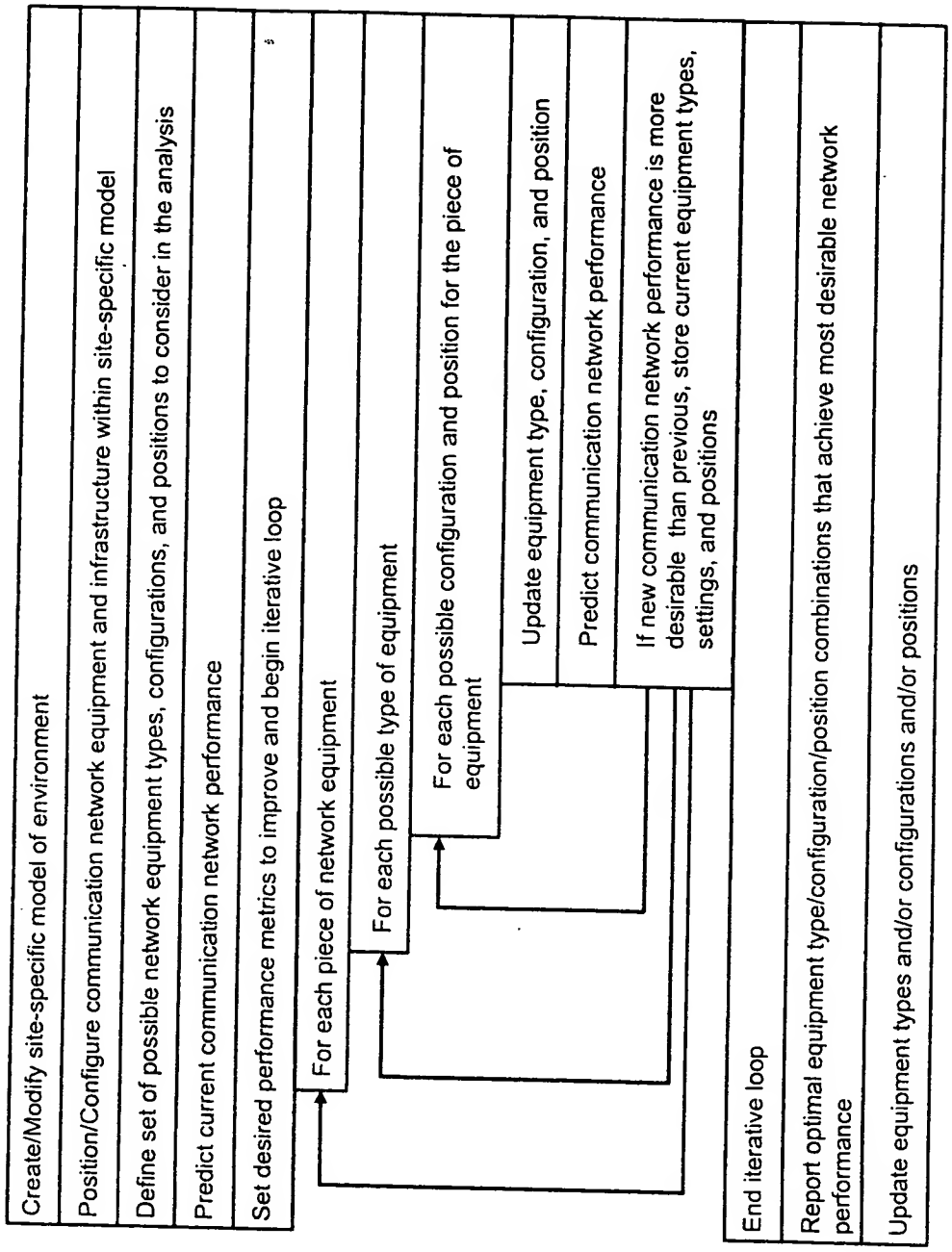


Figure 1

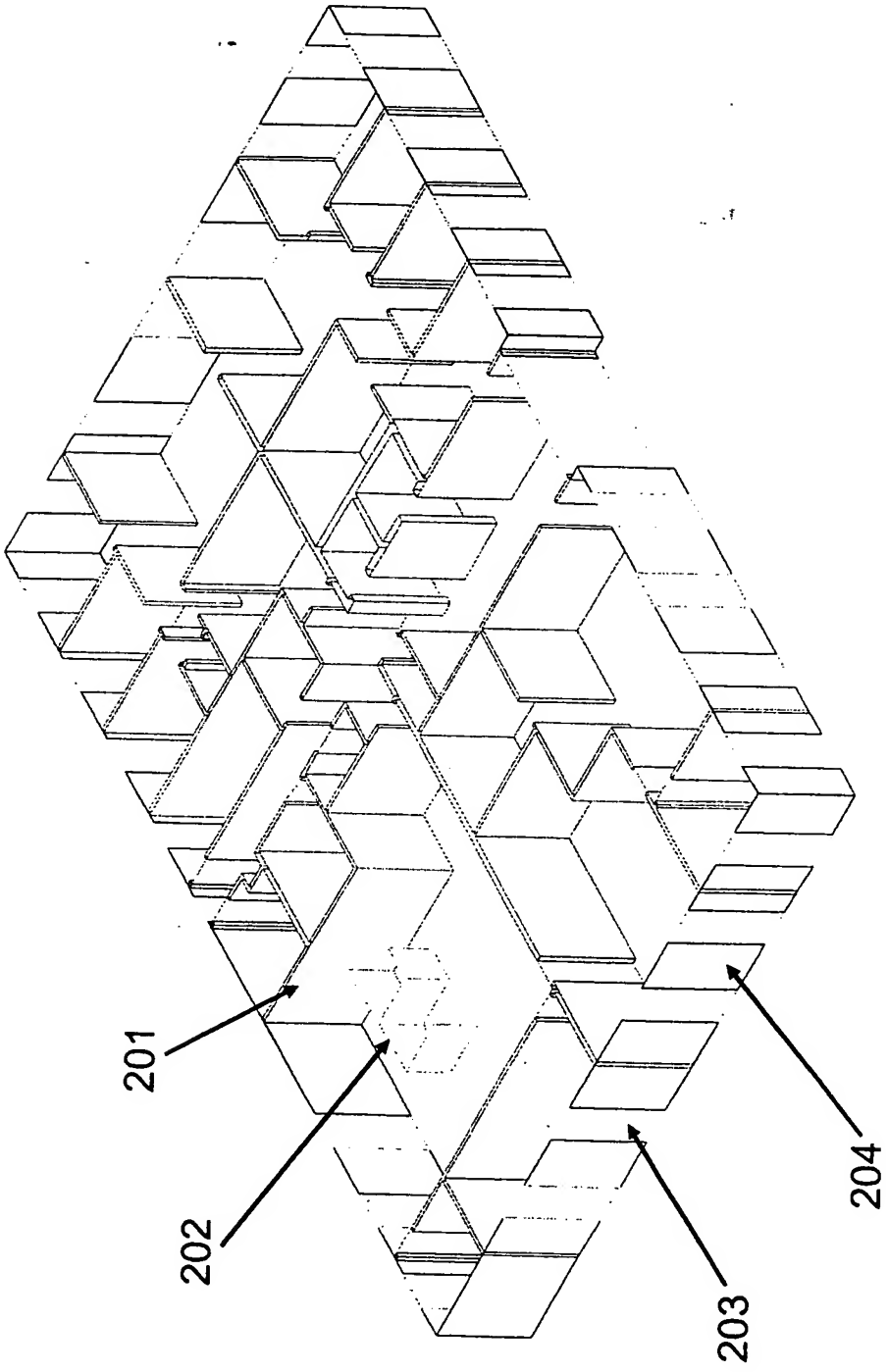
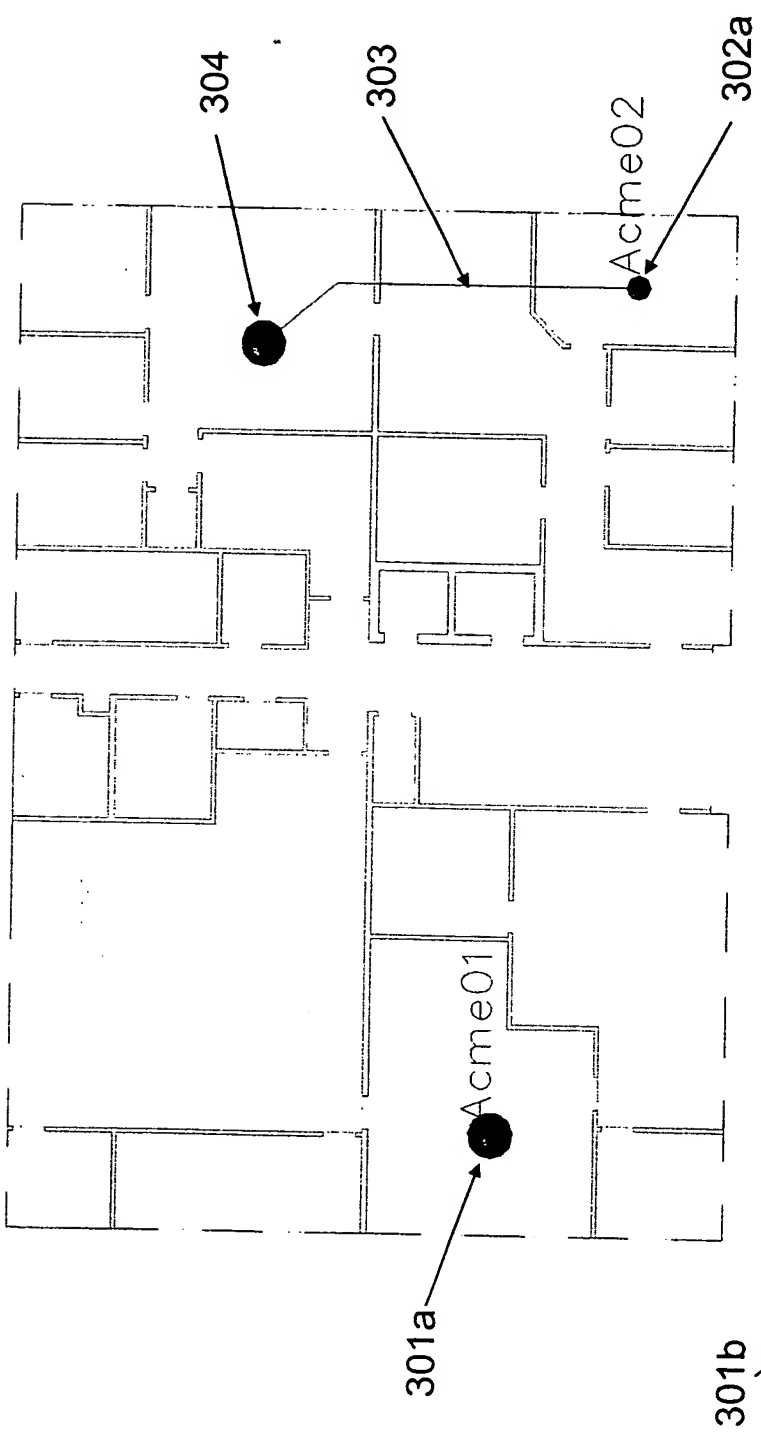


Figure 2



Transceiver:	ACME02
Manufacturer:	Acme
Part Number:	Acme02
Transmit Power:	10 dBm
Channel:	1
Frequency:	2.412 GHz

Transceiver:	ACME01
Manufacturer:	Acme
Part Number:	Acme01
Transmit Power:	10 dBm
Channel:	1
Frequency:	2.412 GHz

Figure 3

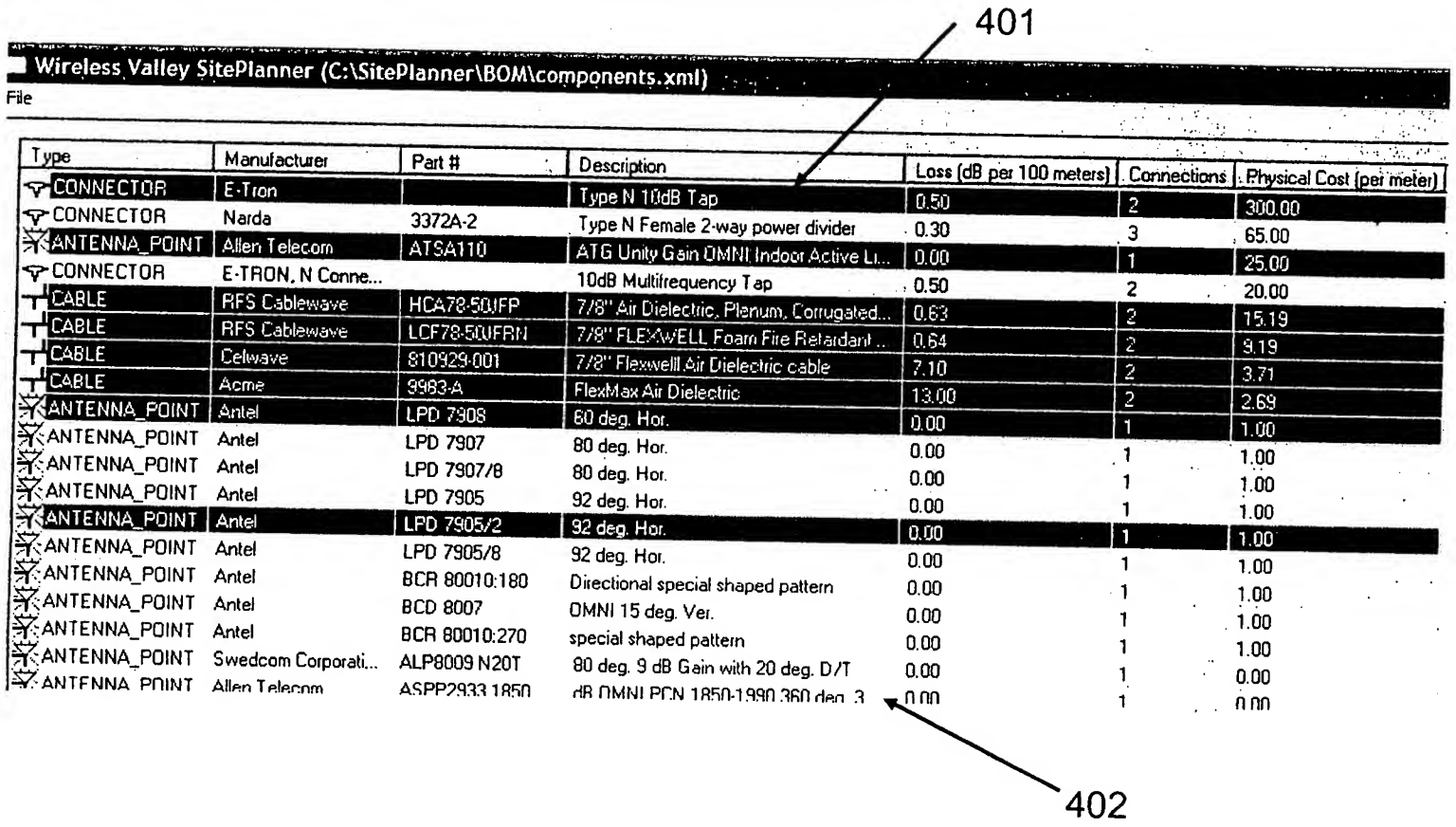

401
Wireless Valley SitePlanner (C:\SitePlanner\BOM\components.xml)
File
Type
Manufacturer
Part #
Description
Loss (dB per 100 meters)
Connections
Physical Cost (per meter)
CONNECTOR E-Tron Type N 10dB Tap 0.50 2 300.00
CONNECTOR Narda 3372A-2 Type N Female 2-way power divider 0.30 3 65.00
ANTENNA_POINT Allen Telecom ATSA110 ATG Unity Gain OMNI Indoor Active Li... 0.00 1 25.00
CONNECTOR E-TRON, N Conne... 10dB Multifrequency Tap 0.50 2 20.00
CABLE RFS Cablewave HCA78-50JFP 7/8" Air Dielectric, Plenum, Corrugated... 0.63 2 15.19
CABLE RFS Cablewave LCF78-50JFRN 7/8" FLEXWELL Foam Fire Retardant ... 0.64 2 9.19
CABLE Celwave 810929-001 7/8" Flexwelll Air Dielectric cable 7.10 2 3.71
CABLE Acme 9983-A FlexMax Air Dielectric 13.00 2 2.69
ANTENNA_POINT Antel LPD 7908 80 deg. Hor. 0.00 1 1.00
ANTENNA_POINT Antel LPD 7907 80 deg. Hor. 0.00 1 1.00
ANTENNA_POINT Antel LPD 7907/8 80 deg. Hor. 0.00 1 1.00
ANTENNA_POINT Antel LPD 7905 92 deg. Hor. 0.00 1 1.00
ANTENNA_POINT Antel LPD 7905/2 92 deg. Hor. 0.00 1 1.00
ANTENNA_POINT Antel LPD 7905/8 92 deg. Hor. 0.00 1 1.00
ANTENNA_POINT Antel BCR 80010:180 Directional special shaped pattern 0.00 1 1.00
ANTENNA_POINT Antel BCD 8007 OMNI 15 deg. Ver. 0.00 1 1.00
ANTENNA_POINT Antel BCR 80010:270 special shaped pattern 0.00 1 1.00
ANTENNA_POINT Swedcom Corporati... ALP8009 N20T 80 deg. 9 dB Gain with 20 deg. D/T 0.00 1 0.00
ANTENNA_POINT Allen Telecom ASPP2933 1850 dB OMNI PCN 1850-1990 360 deg. 3 0.00 1 0.00
402

Figure 4

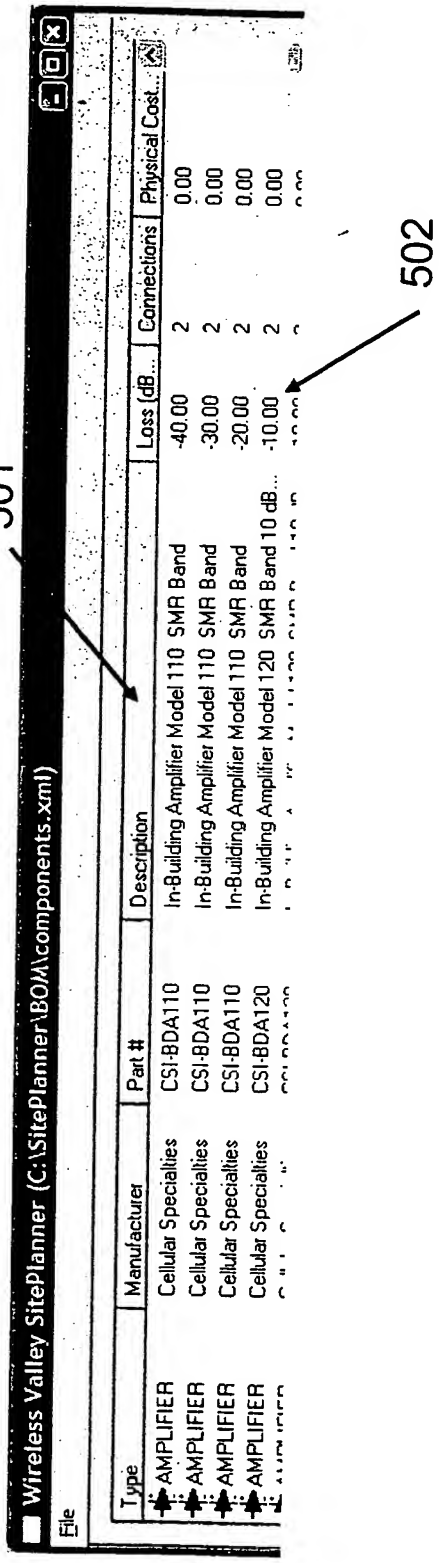

Wireless Valley SitePlanner (C:\SitePlanner\BOM\components.xml)
File
Type
Manufacturer
Part #
Description
Loss (dB...
Connections
Physical Cost...
AMPLIFIER
Cellular Specialties
CSI-BDA110
In-Building Amplifier Model 110 SMR Band
-40.00
2
0.00
AMPLIFIER
Cellular Specialties
CSI-BDA110
In-Building Amplifier Model 110 SMR Band
-30.00
2
0.00
AMPLIFIER
Cellular Specialties
CSI-BDA110
In-Building Amplifier Model 110 SMR Band
-20.00
2
0.00
AMPLIFIER
Cellular Specialties
CSI-BDA120
In-Building Amplifier Model 120 SMR Band 10 dB...
-10.00
2
0.00
501
502

Figure 5

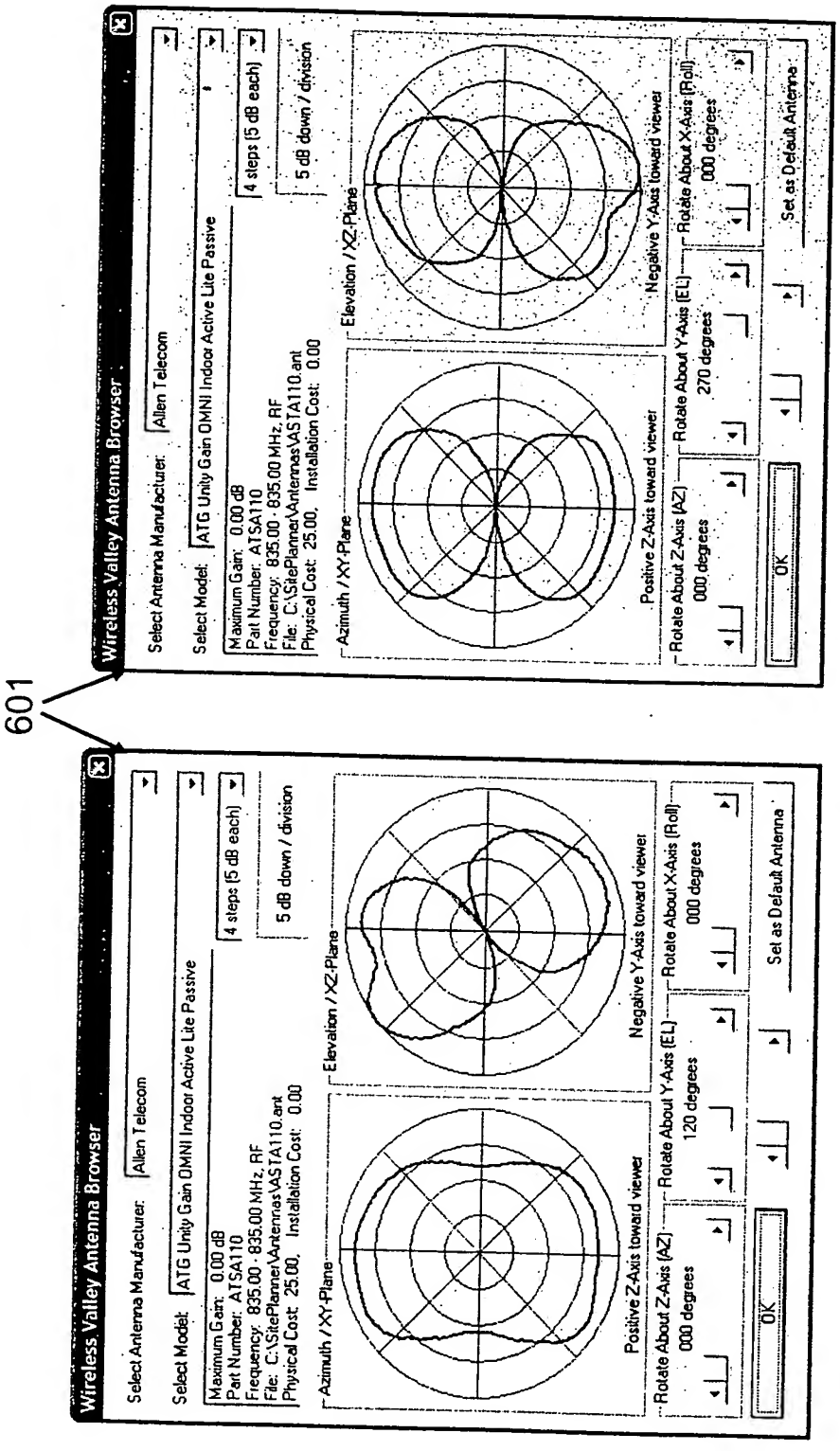

601
Wireless Valley Antenna Browser
Select Antenna Manufacturer:
Allen Telecom
Select Model:
ATG Unity Gain OMNI Indoor Active Lite Passive
Maximum Gain: 0.00 dB
Part Number: ATSA110
Frequency: 835.00 - 835.00 MHz, RF
File: C:\SitePlanner\Antennas\ATSA110.ant
Physical Cost: 25.00, Installation Cost: 0.00
4 steps (5 dB each)
5 dB down / division
Azimuth / XY-Plane
Elevation / XZ-Plane
Positive Z-Axis toward viewer
Negative Y-Axis toward viewer
Rotate About Z-Axis (AZ)
000 degrees
Rotate About Y-Axis (EL)
120 degrees
270 degrees
Rotate About X-Axis (Roll)
000 degrees
OK
Set as Default Antenna

Figure 6

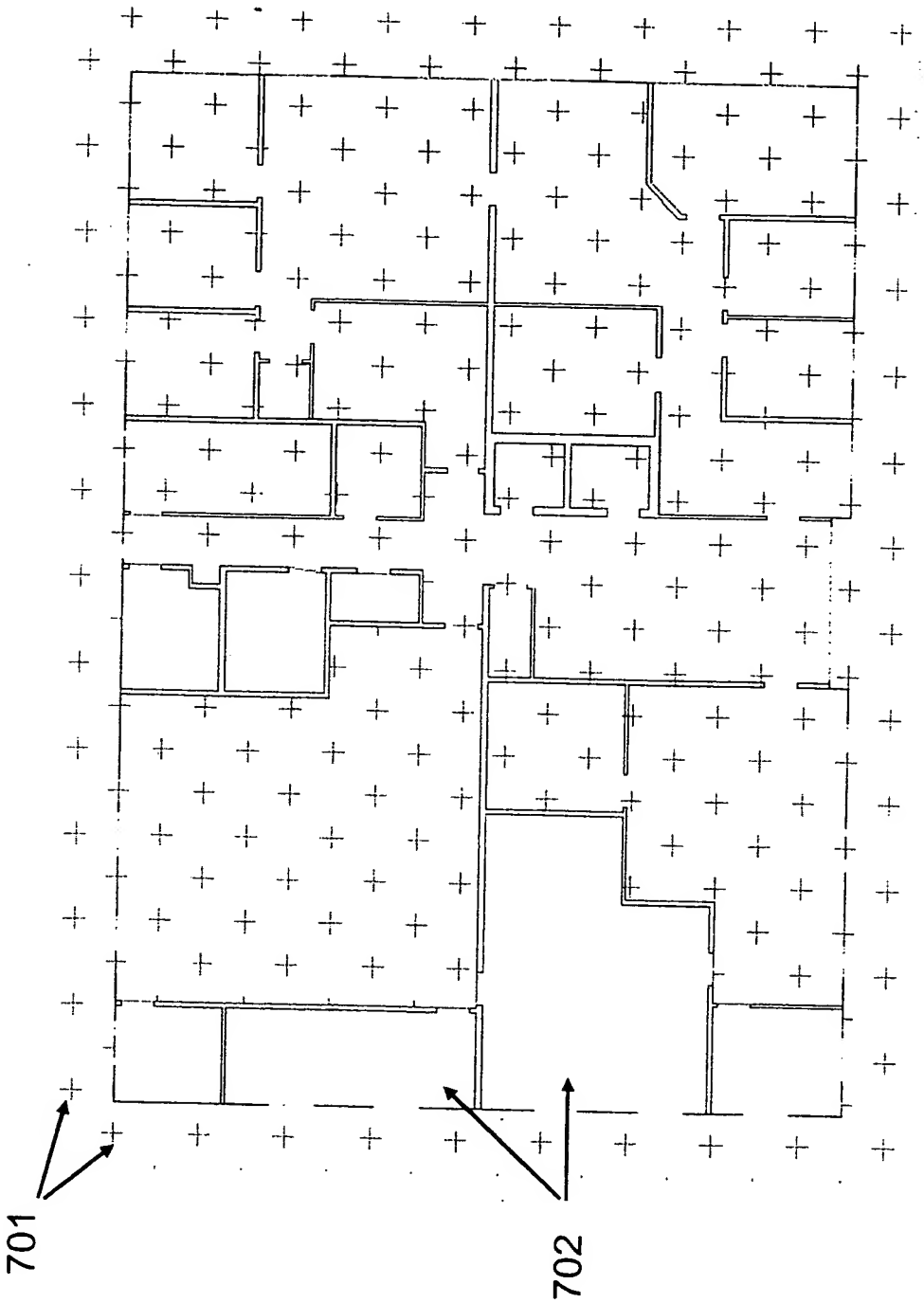


Figure 7

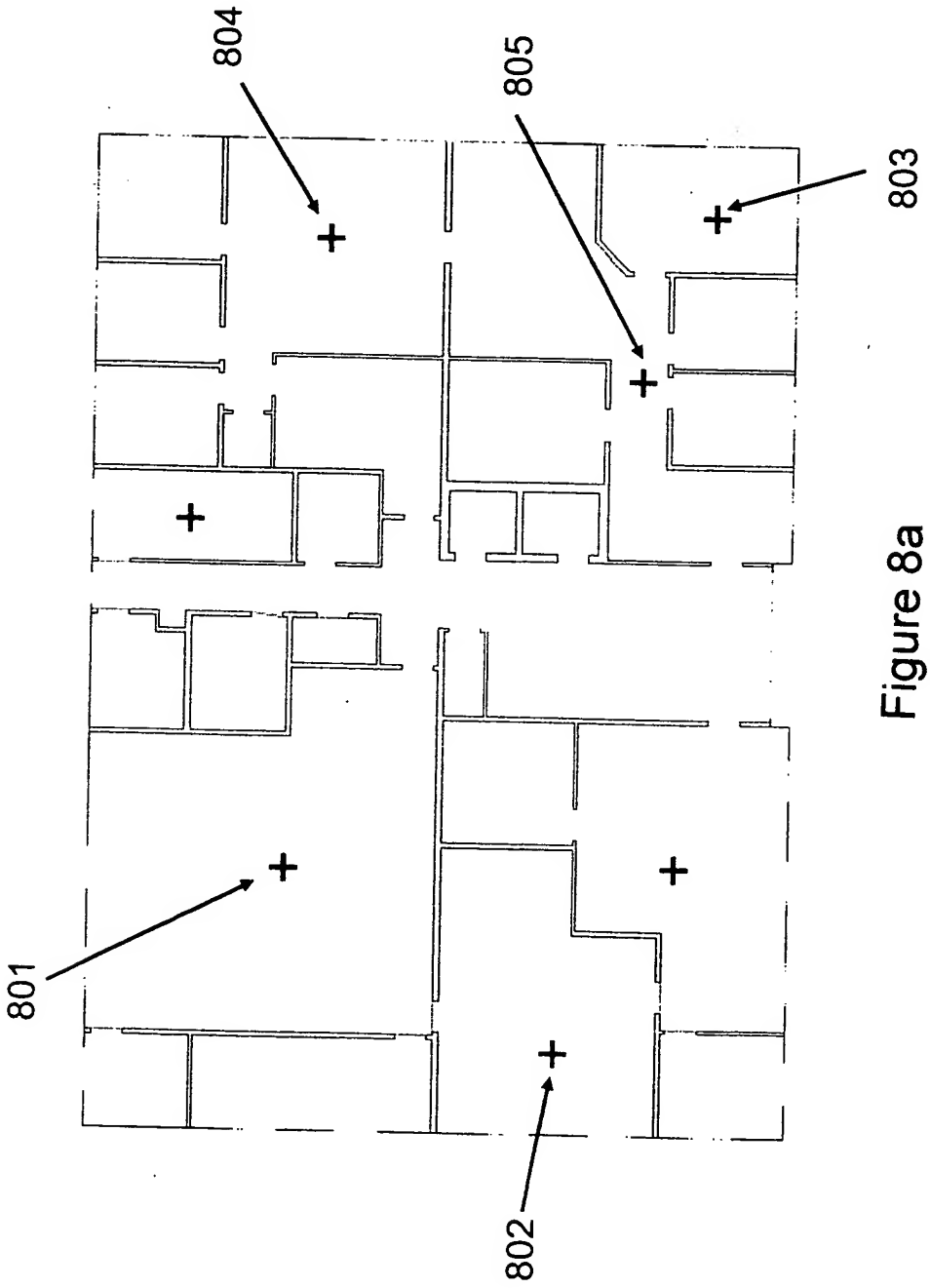


Figure 8a

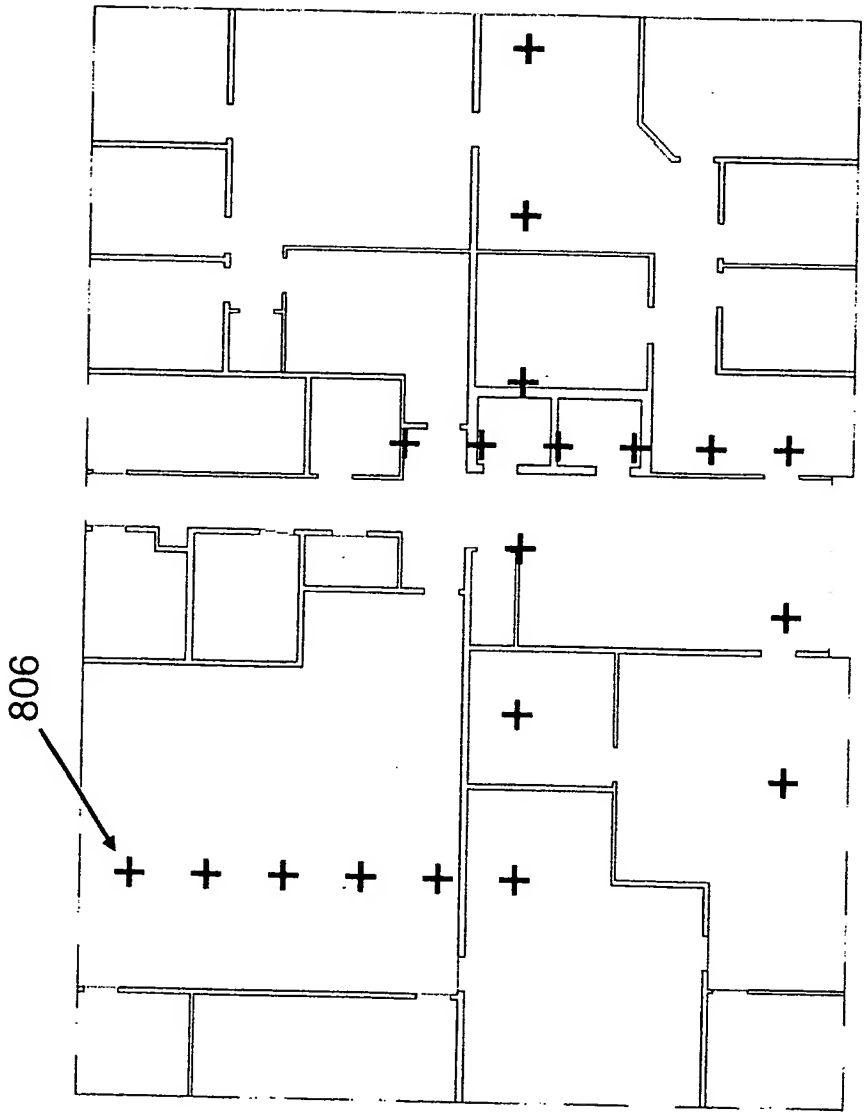


Figure 8b

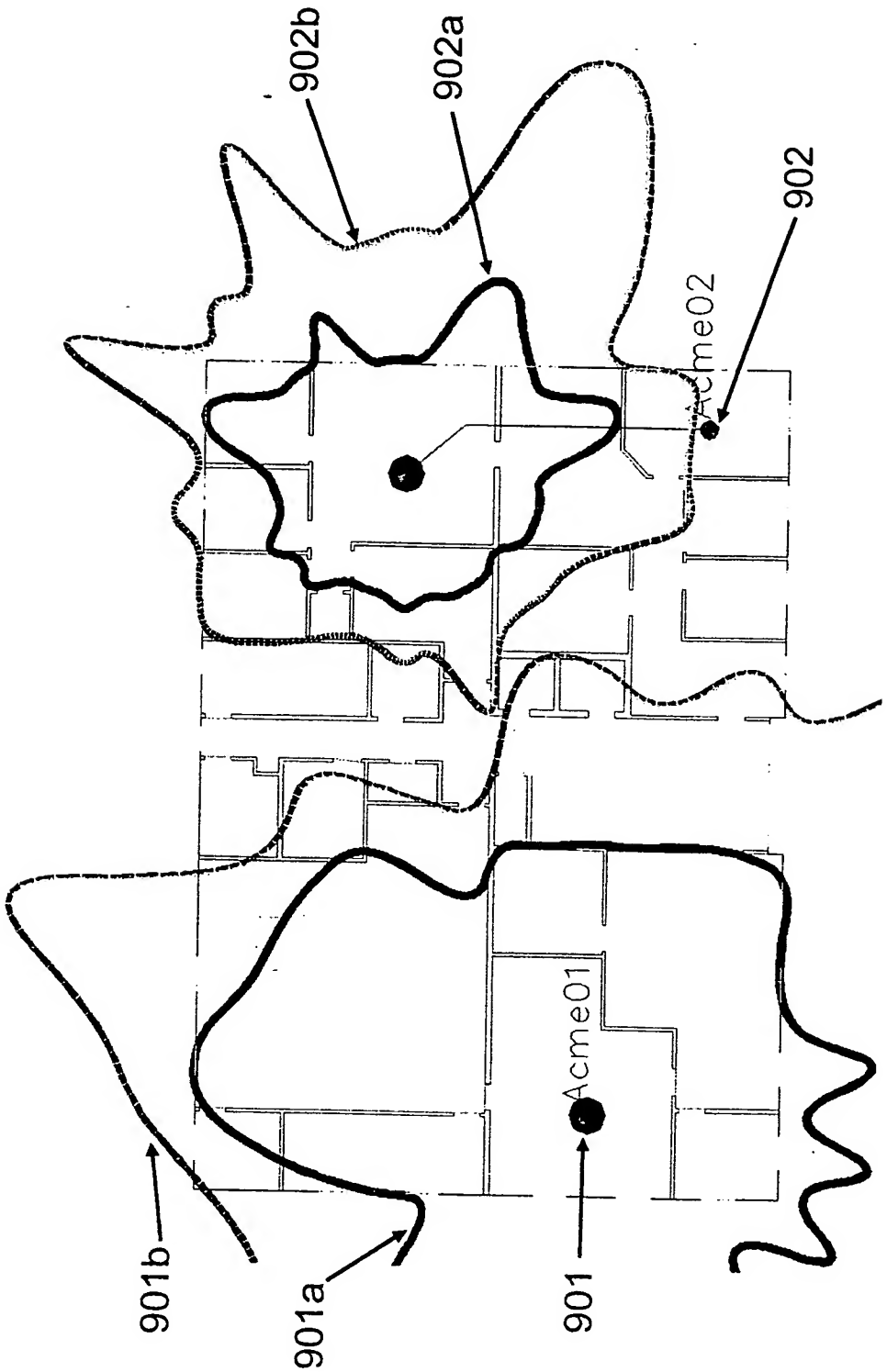


Figure 9

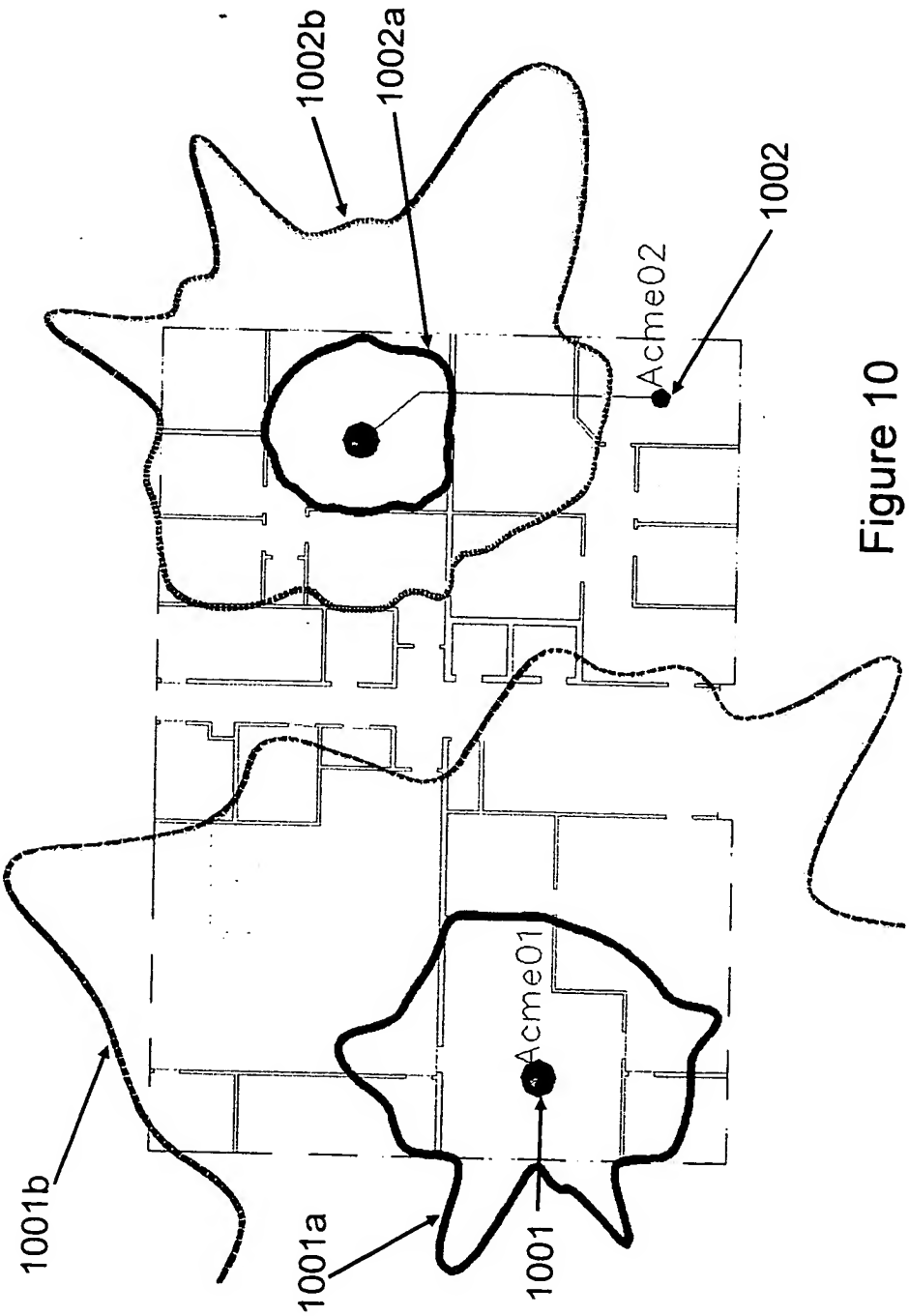


Figure 10

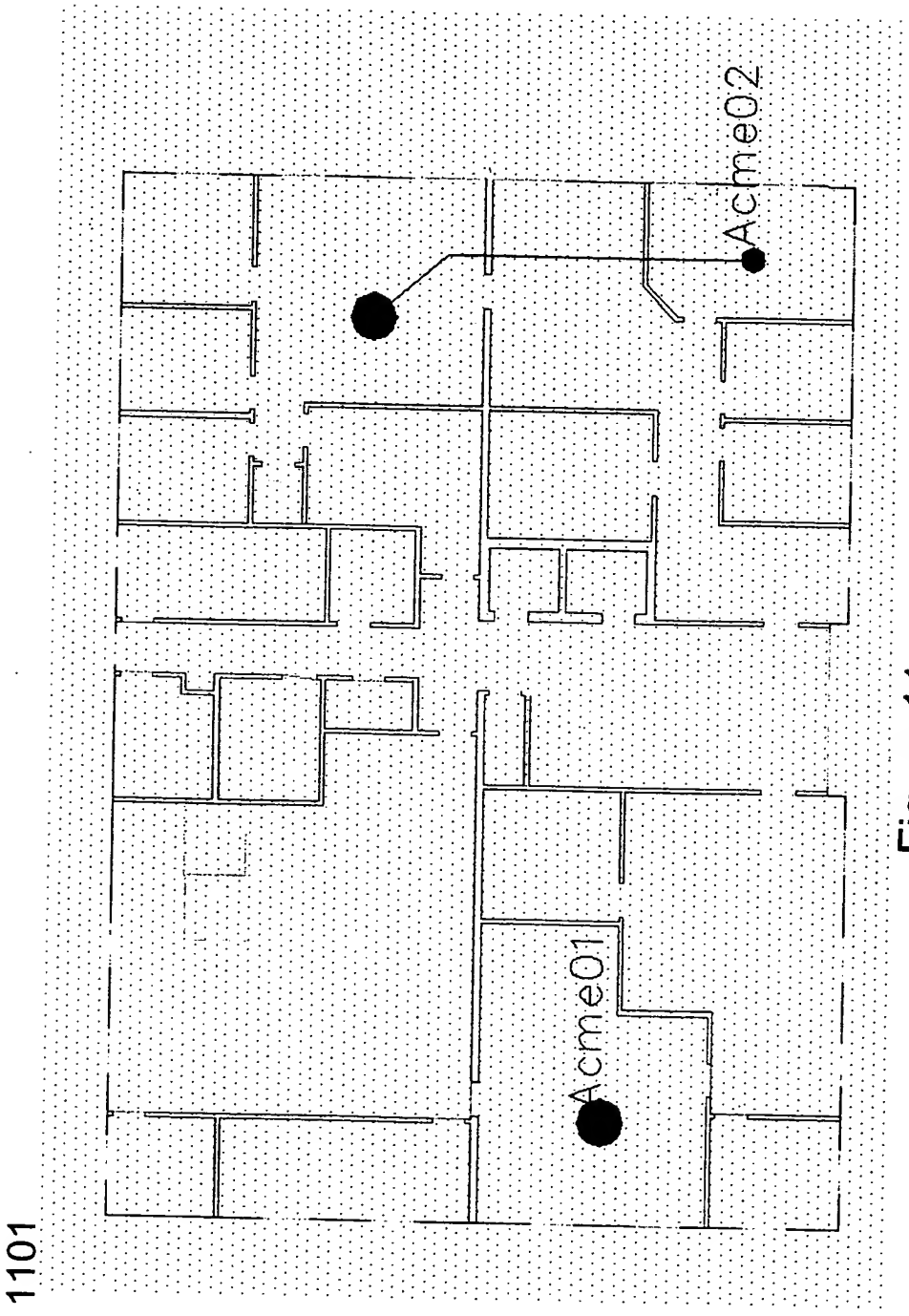
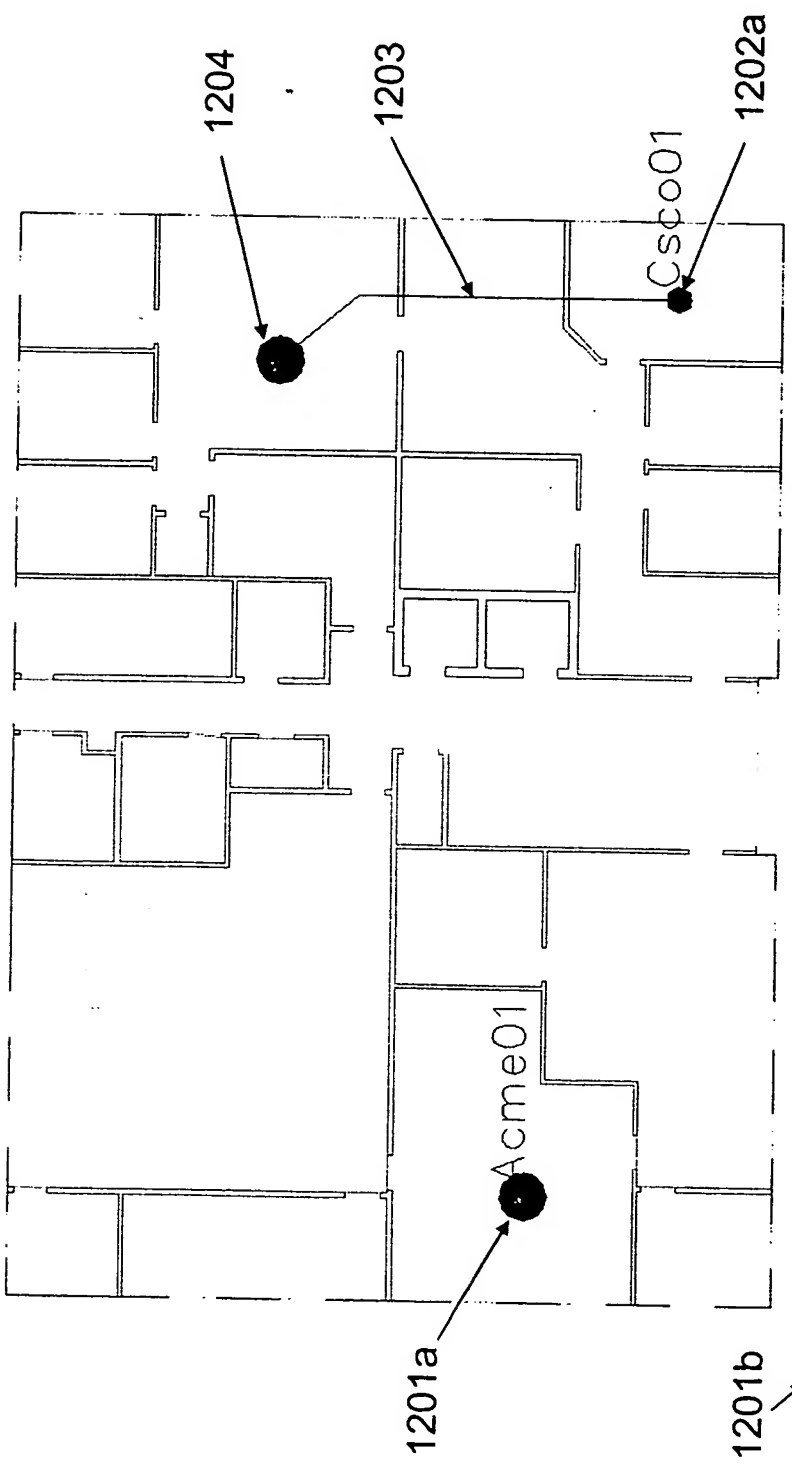


Figure 11



Transceiver:	CSCO01
Manufacturer:	Csco
Part Number:	Csco01
Transmit Power:	15 dBm
Channel:	6
Frequency:	2.437 GHz

Transceiver:	ACME01
Manufacturer:	Acme
Part Number:	Acme01
Transmit Power:	7 dBm
Channel:	1
Frequency:	2.412 GHz

Figure 12

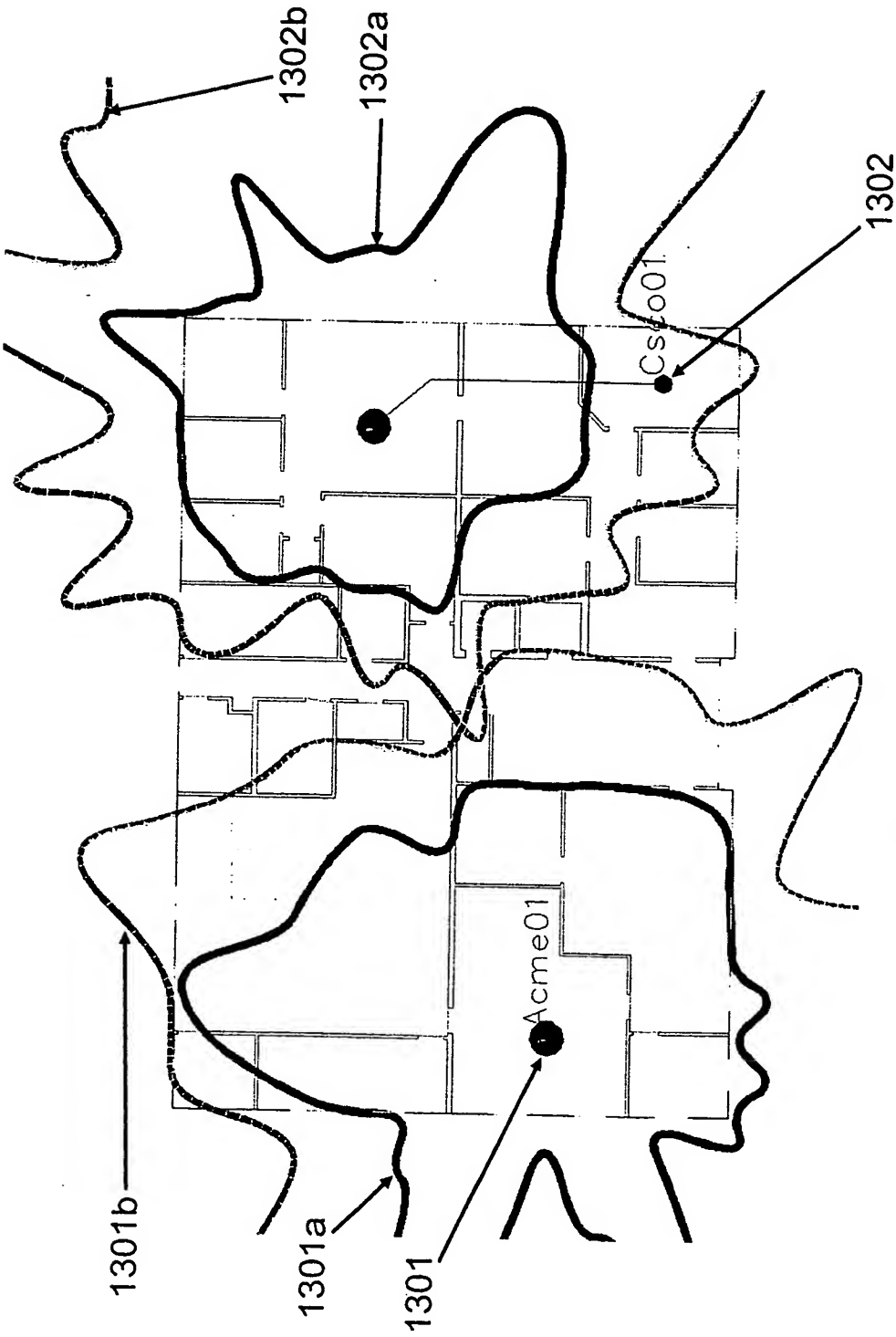


Figure 13

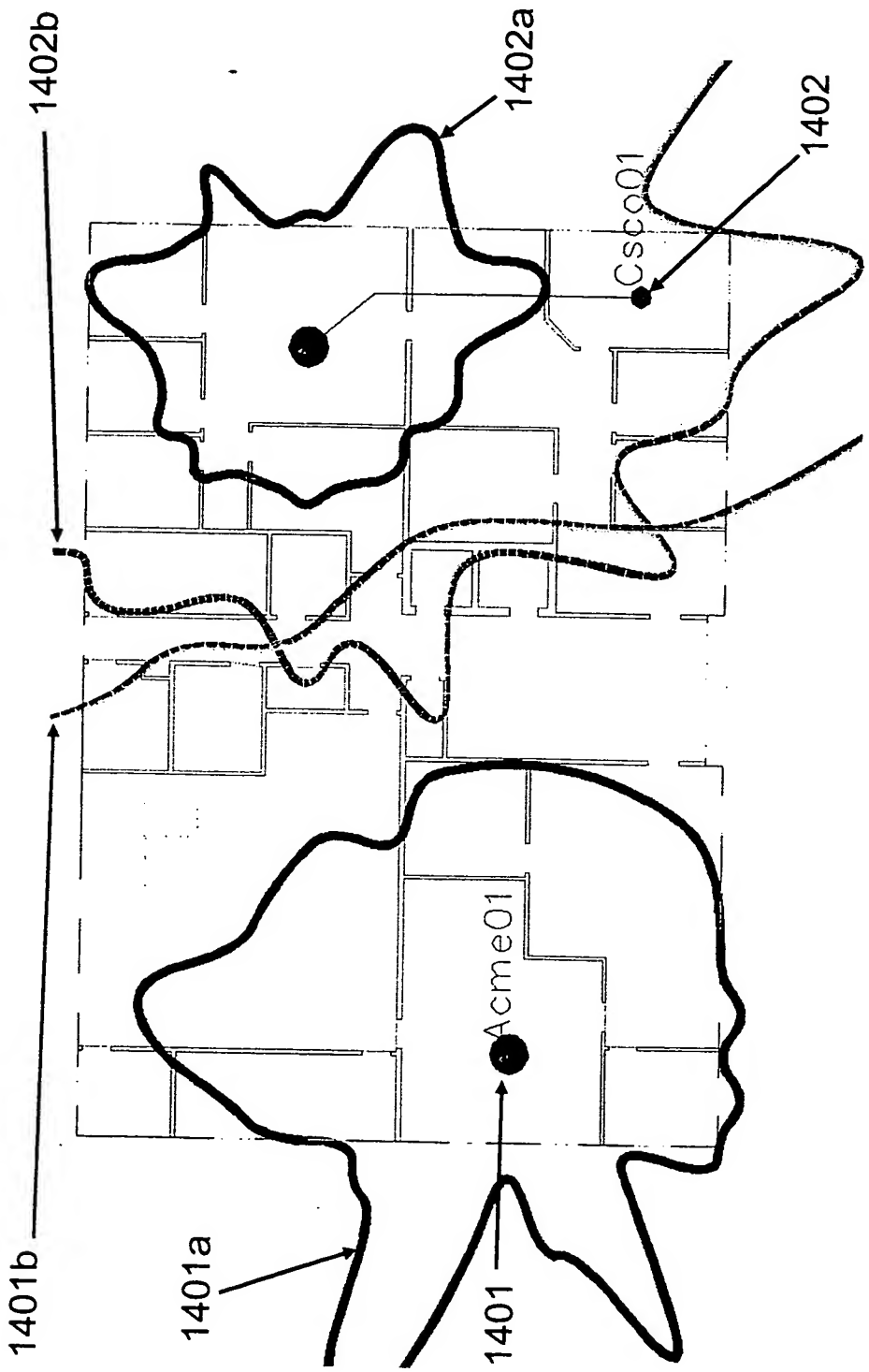


Figure 14

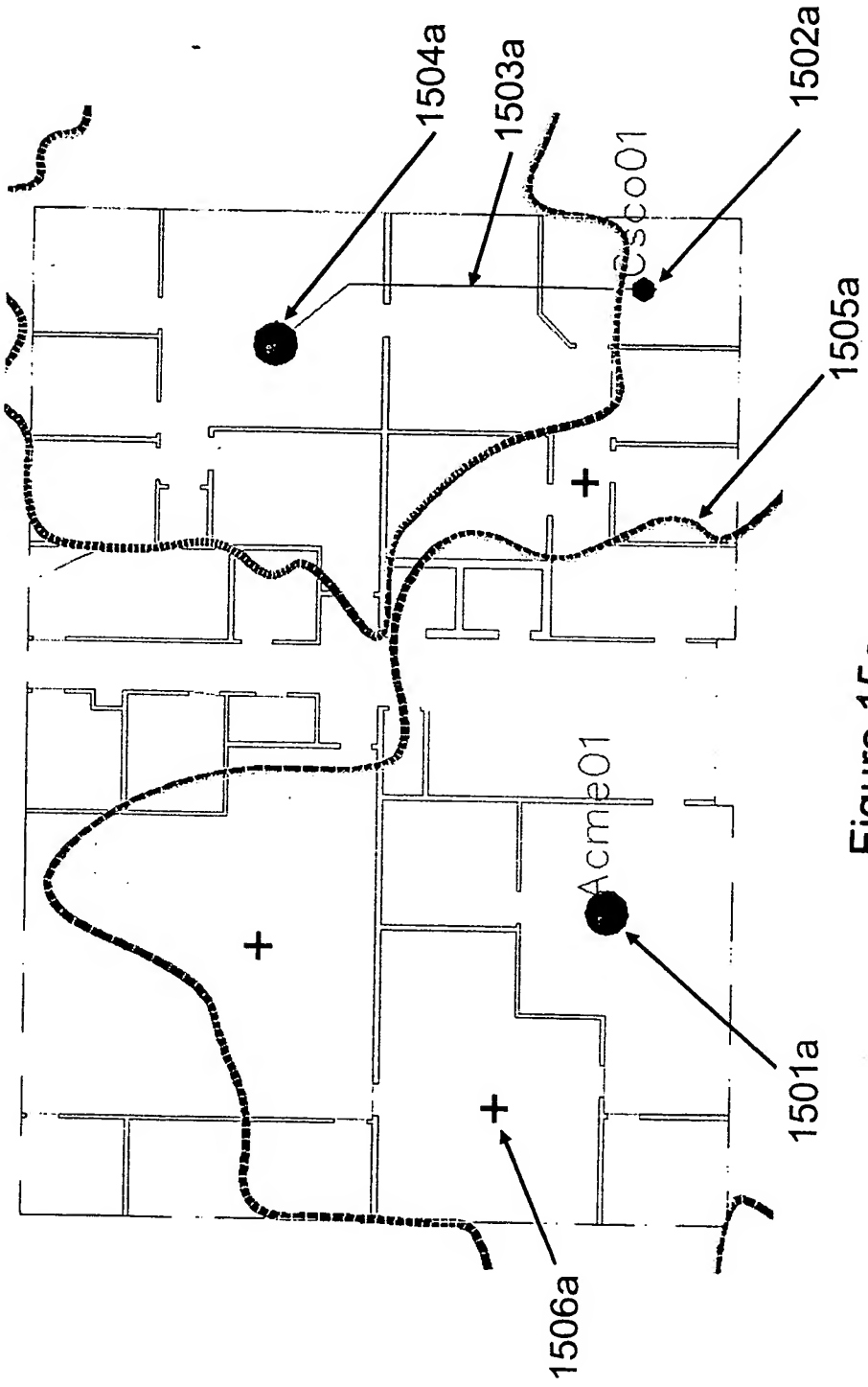


Figure 15a

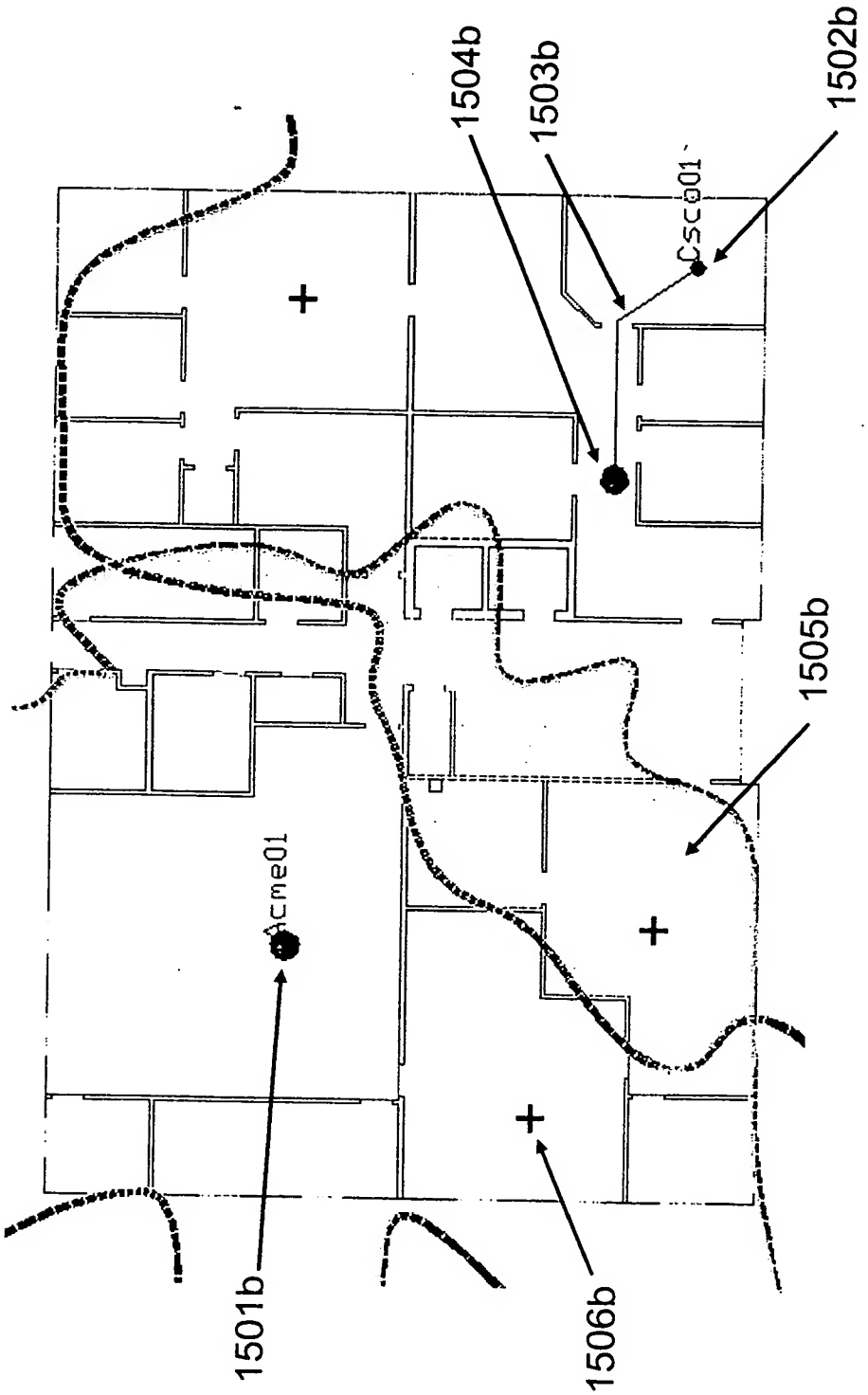


Figure 15b

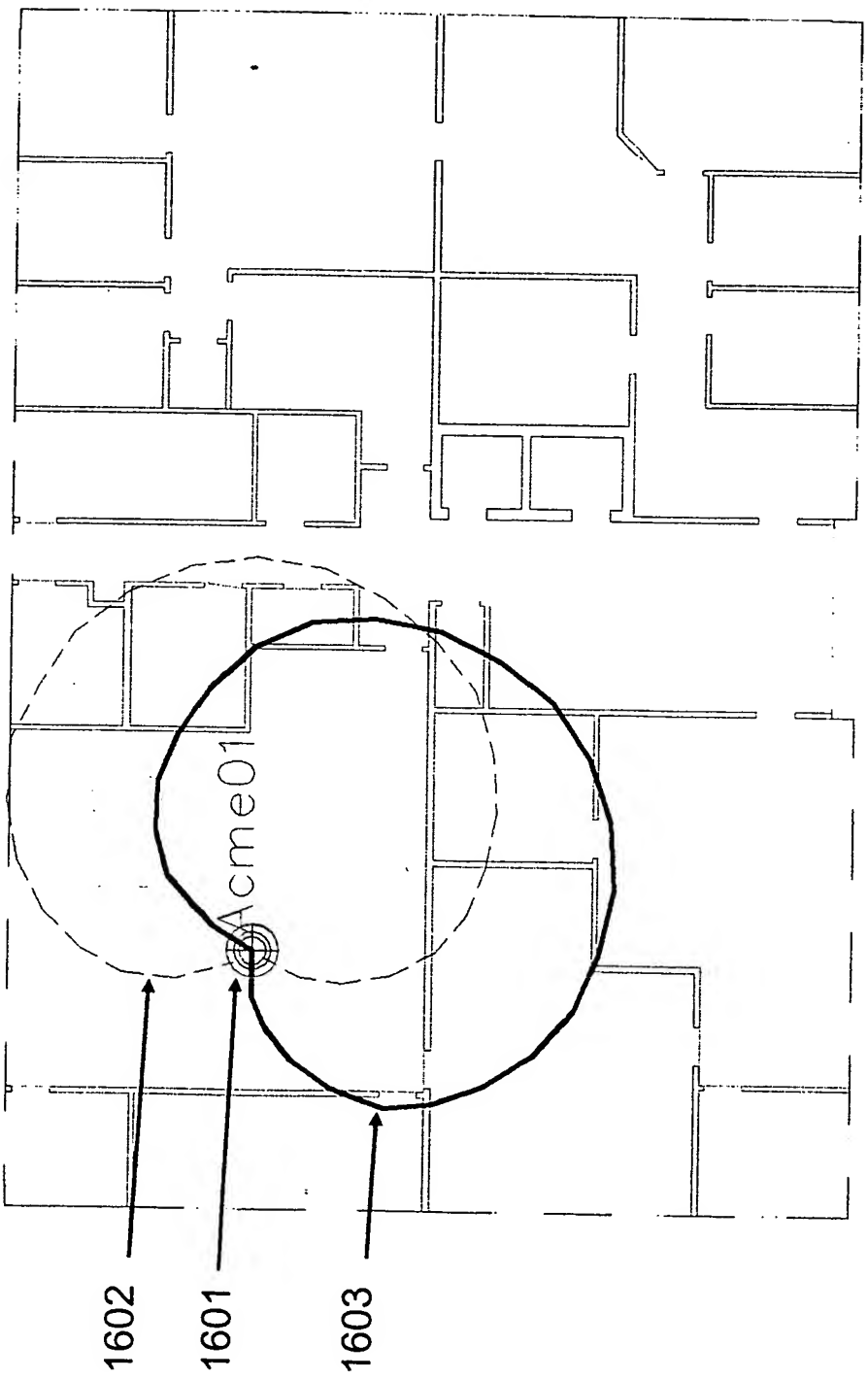


Figure 16

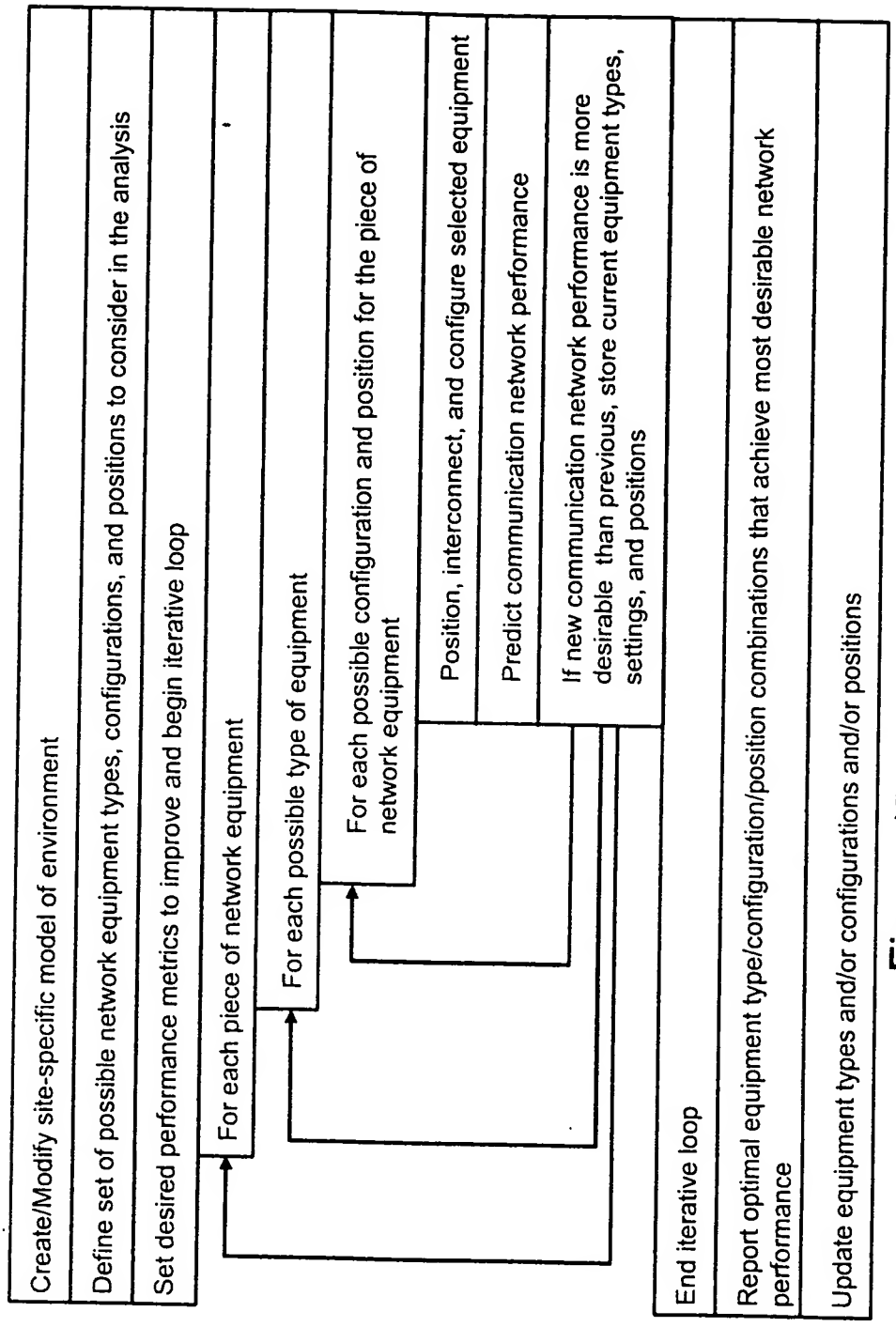

Create/Modify site-specific model of environment
Define set of possible network equipment types, configurations, and positions to consider in the analysis
Set desired performance metrics to improve and begin iterative loop
For each piece of network equipment
For each possible type of equipment
For each possible configuration and position for the piece of network equipment
Position, interconnect, and configure selected equipment
Predict communication network performance
If new communication network performance is more desirable than previous, store current equipment types, settings, and positions
End iterative loop
Report optimal equipment type/configuration/position combinations that achieve most desirable network performance
Update equipment types and/or configurations and/or positions
101
103
105
106
107
108
109
110
111
112
113
114

Figure 17

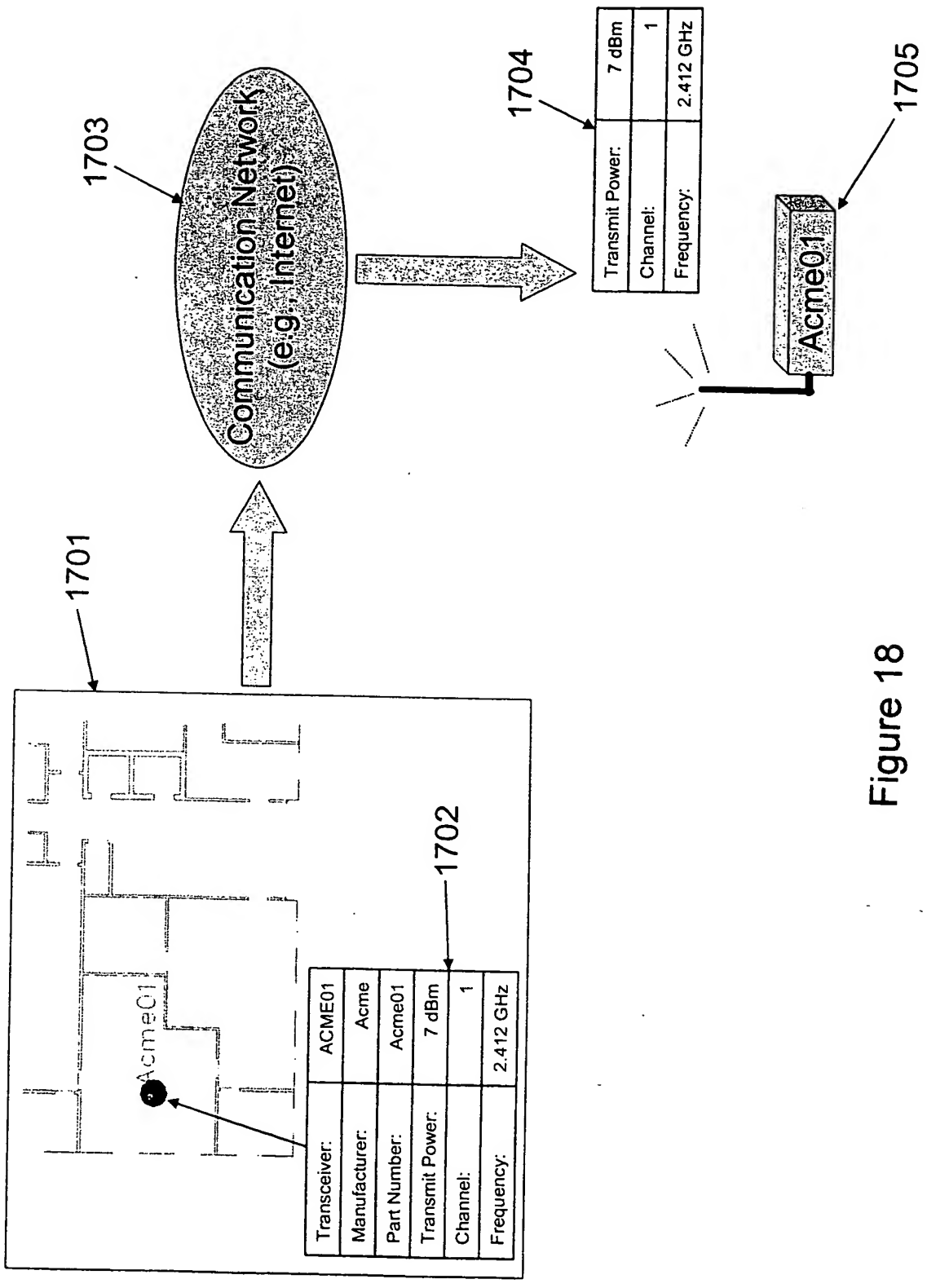

1703
Communication Network (e.g., Internet)
1704
Transmit Power: 7 dBm
Channel: 1
Frequency: 2.412 GHz
1705
Acme01
1701
1702
Acme01
Transceiver: ACME01
Manufacturer: Acme
Part Number: Acme01
Transmit Power: 7 dBm
Channel: 1
Frequency: 2.412 GHz

Figure 18

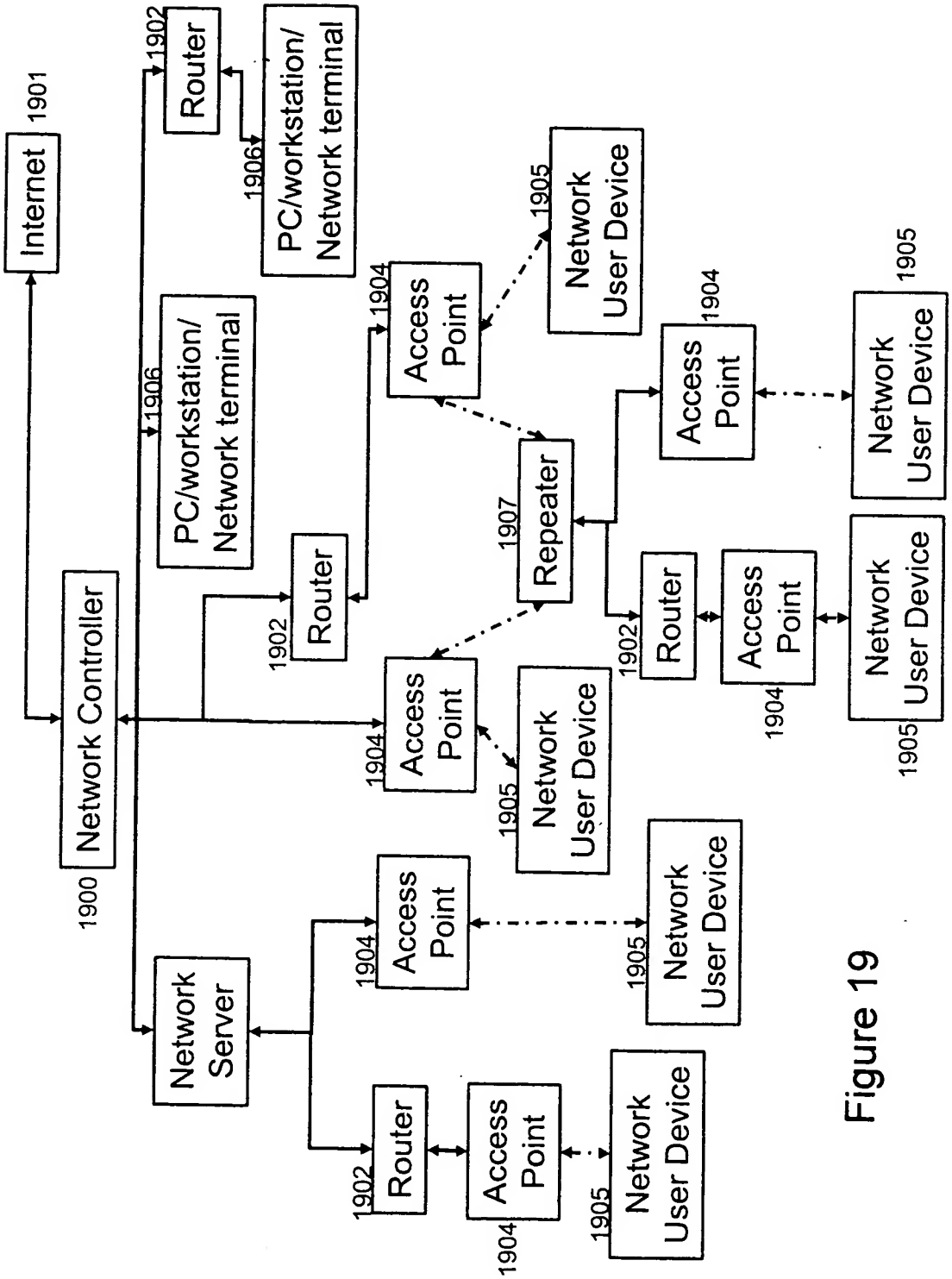

Internet
1901
Network Controller
1900
Network Server
Router
1902
PC/workstation/ Network terminal
1906
Access Point
1904
Network User Device
1905
Repeater
1907

Figure 19

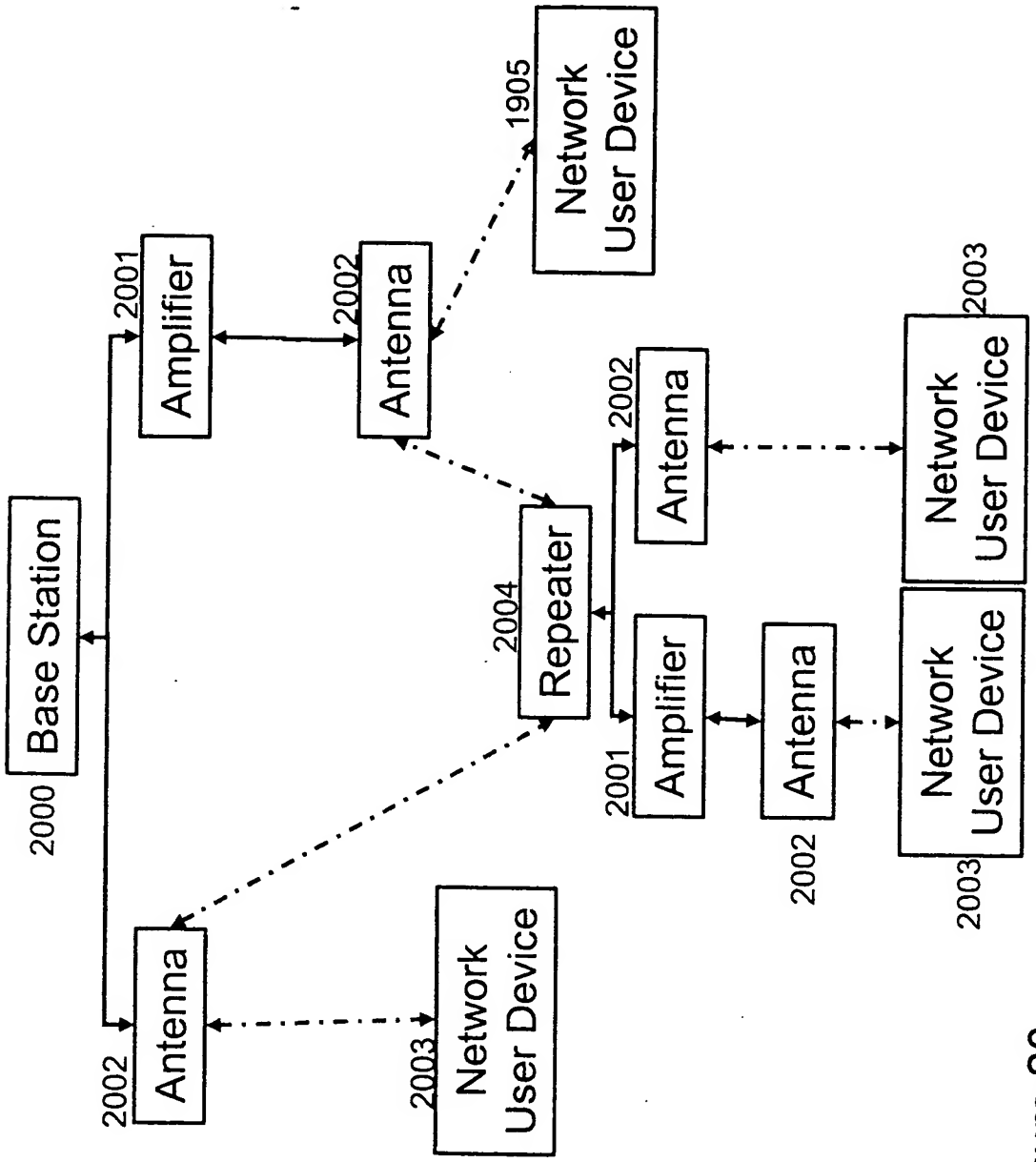

Base Station
2000
Amplifier
2001
Antenna
2002
Network User Device
1905
Repeater
2004
Antenna
2002
Network User Device
2003
Amplifier
2001
Antenna
2002
Network User Device
2003
Antenna
2002
Network User Device
2003

Figure 20

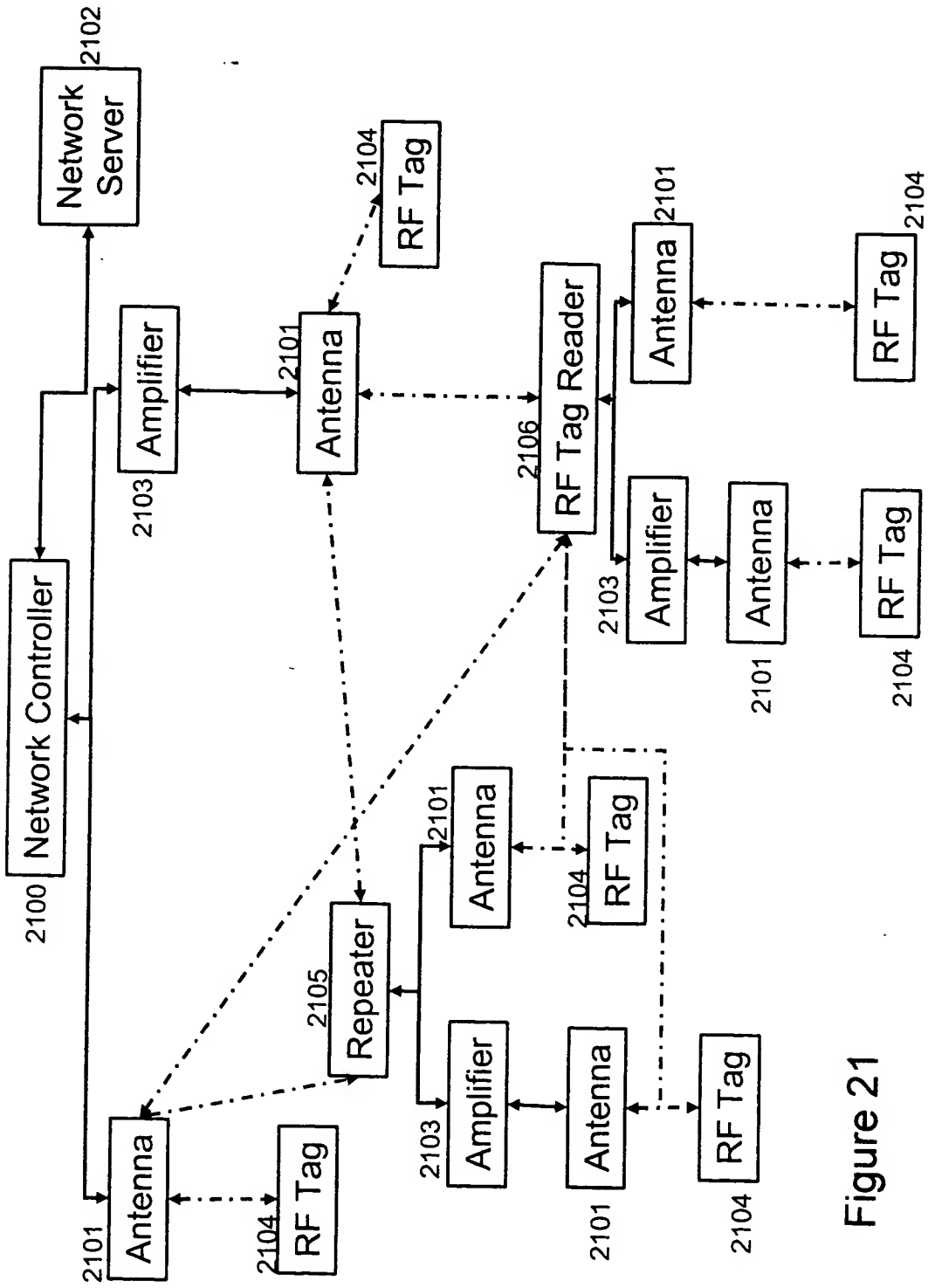

Network Server
2102
Network Controller
2100
Amplifier
2103
Antenna
2101
RF Tag
2104
RF Tag Reader
2106
Repeater
2105

Figure 21

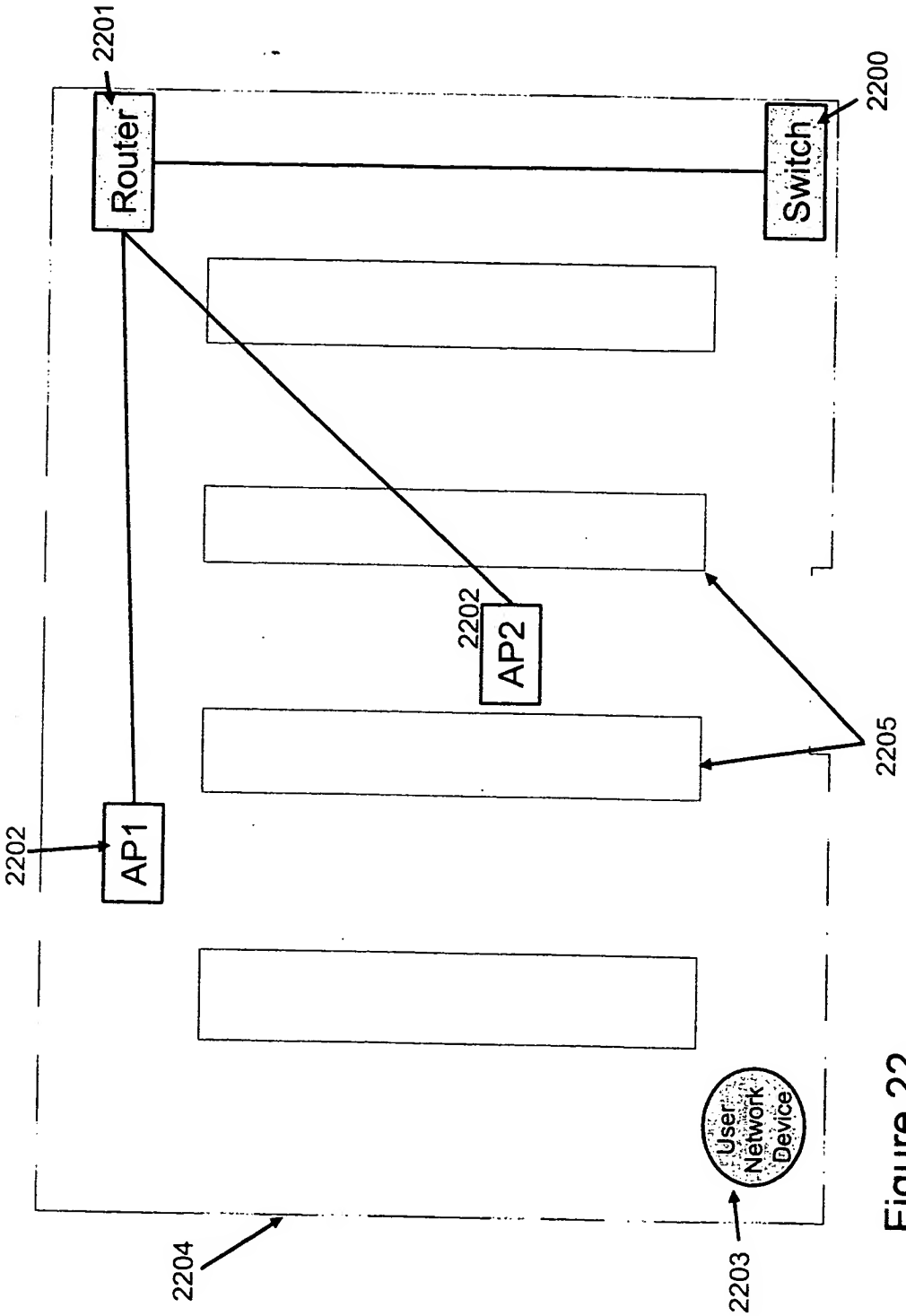

2201
Router
2200
Switch
2202
AP2
2205
2202
AP1
User Network Device
2204
2203

Figure 22

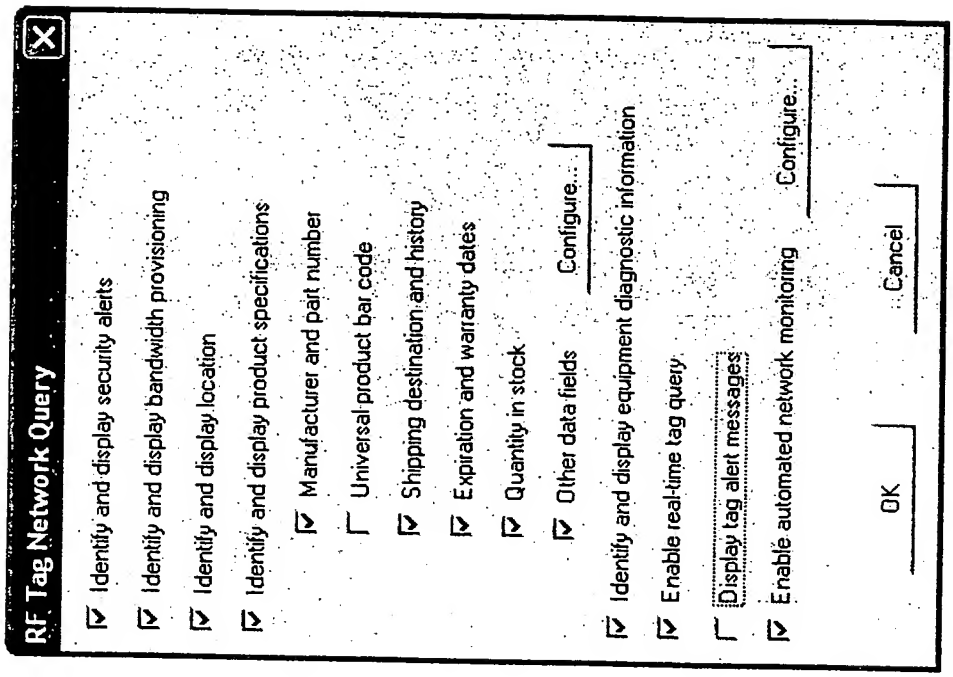

RF Tag Network Query
Identify and display security alerts
Identify and display bandwidth provisioning
Identify and display location
Identify and display product specifications
Manufacturer and part number
Universal product bar code
Shipping destination and history
Expiration and warranty dates
Quantity in stock
Other data fields
Configure...
Identify and display equipment diagnostic information
Enable real-time tag query
Display tag alert messages
Enable automated network monitoring
Configure...
OK
Cancel

Figure 23a

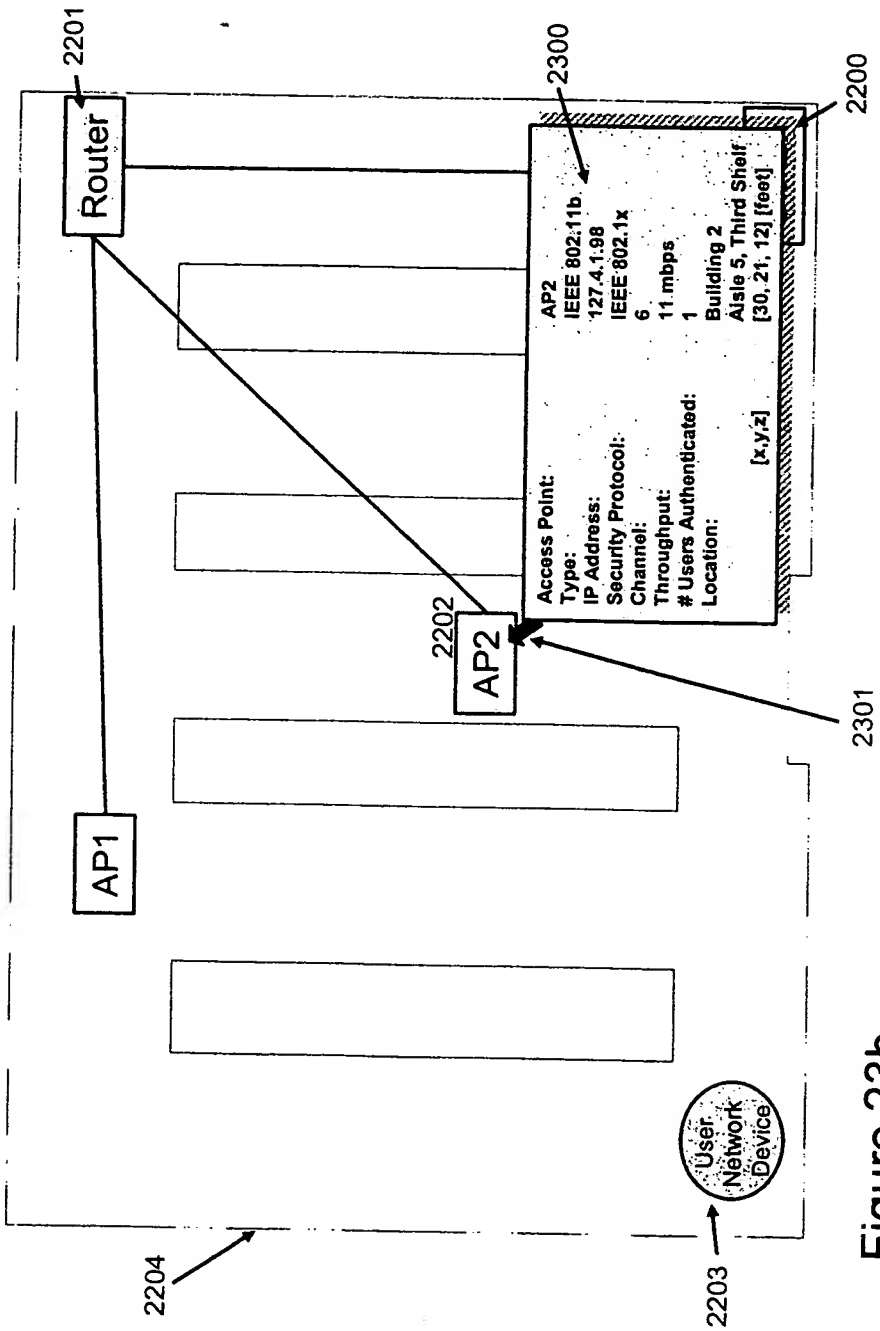

2201
Router
2300
2200
Access Point: AP2
Type: IEEE 802.11b
IP Address: 127.4.1.98
Security Protocol: IEEE 802.1x
Channel: 6
Throughput: 11 mbps
Users Authenticated: 1
Location: Building 2
Aisle 5, Third Shelf
[x,y,z] [30, 21, 12] [feet]
2202
AP2
2301
AP1
User Network Device
2204
2203

Figure 23b

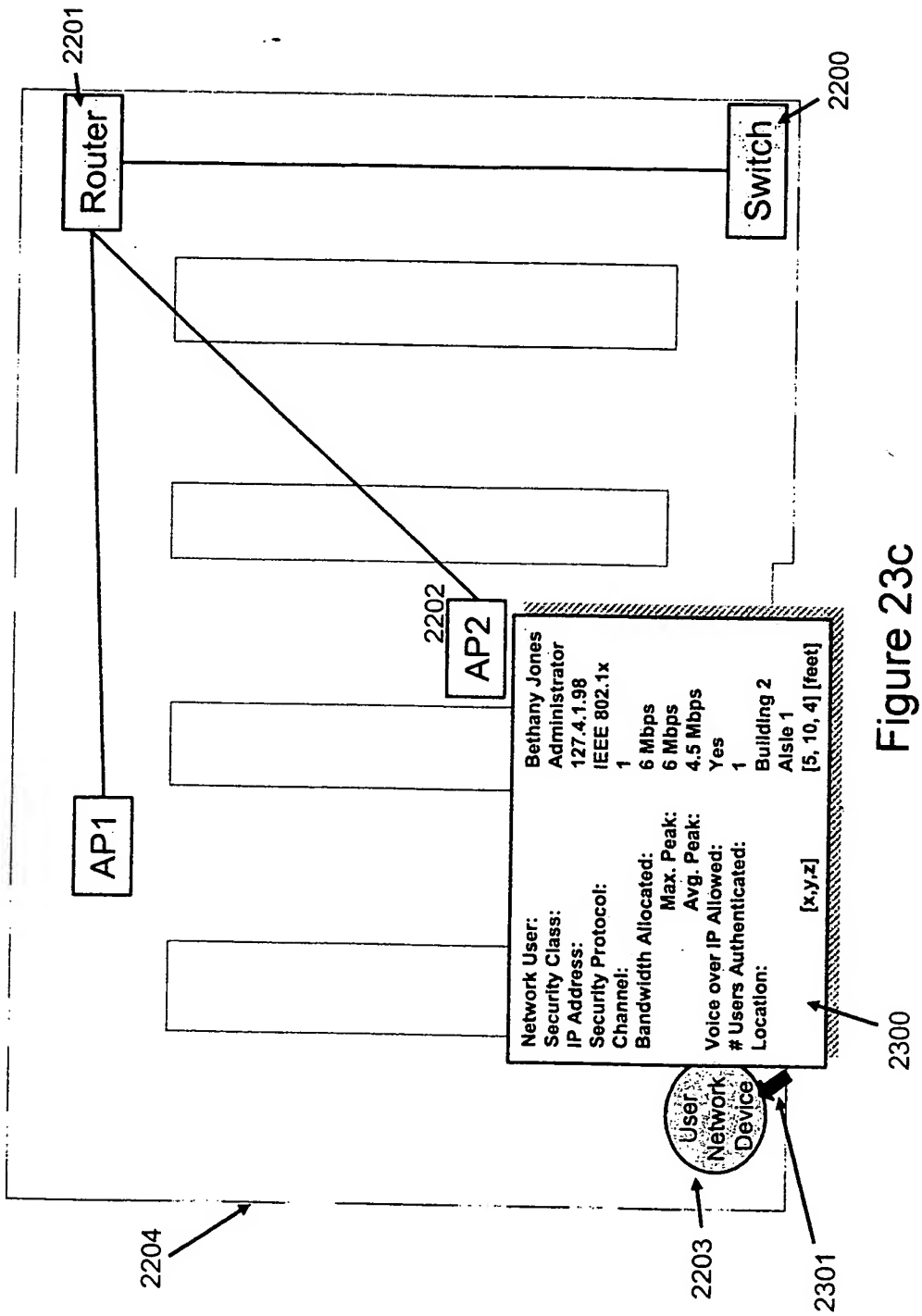

2201
Router
2200
Switch
AP1
2202
AP2
Network User: Bethany Jones
Security Class: Administrator
IP Address: 127.4.1.98
Security Protocol: IEEE 802.1x
Channel: 1
Bandwidth Allocated:
Max. Peak: 6 Mbps
Avg. Peak: 4.5 Mbps
Voice over IP Allowed: Yes
Users Authenticated: 1
Location: [x,y,z] Building 2 Aisle 1 [5, 10, 4] [feet]
2300
User Network Device
2204
2203
2301

Figure 23c

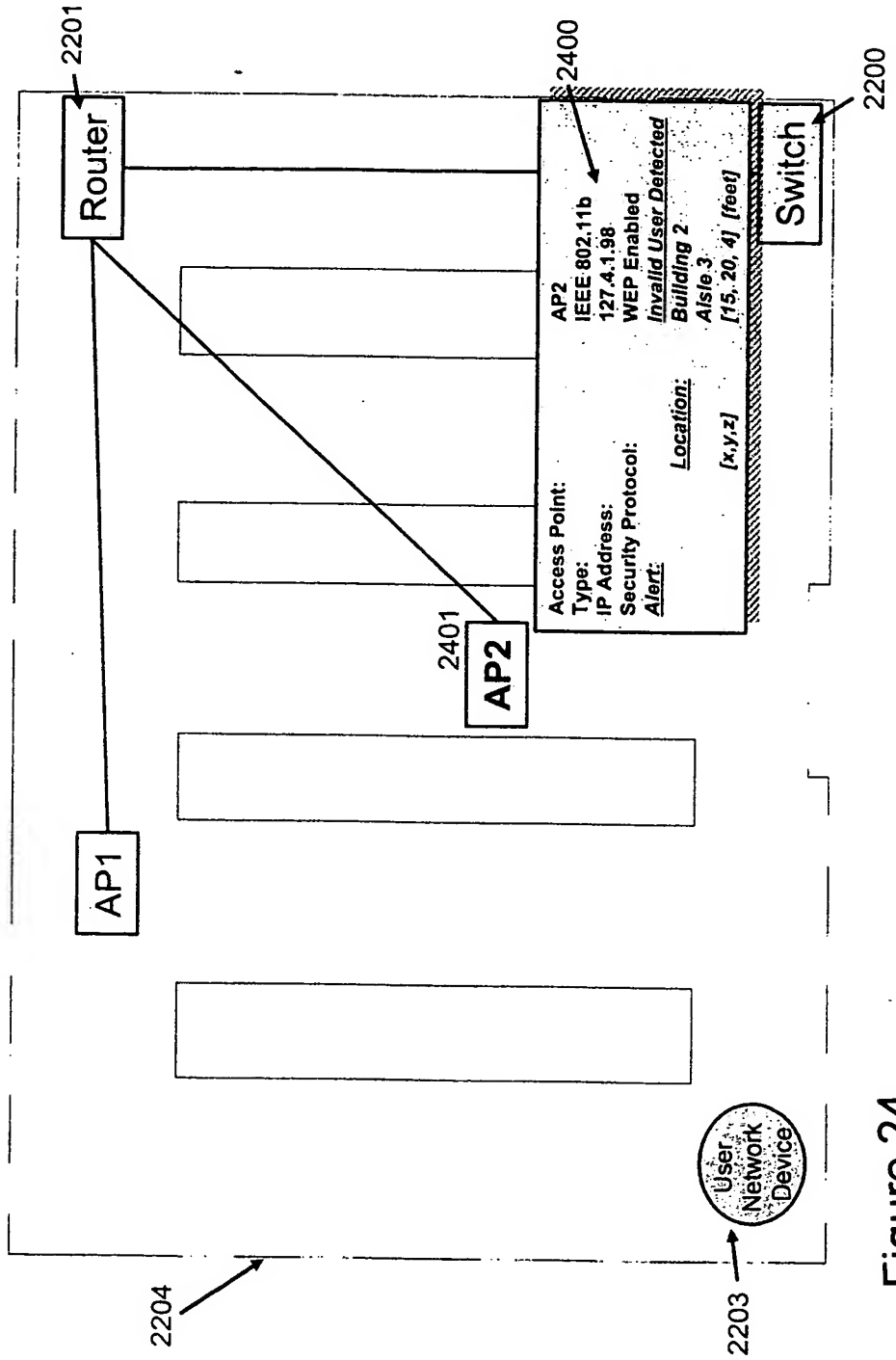

2201
Router
2400
2200
Switch
AP2
IEEE 802.11b
127.4.1.98
WEP Enabled
Invalid User Detected
Building 2
Aisle 3
[15, 20, 4] [feet]
Location:
[x,y,z]
Access Point:
Type:
IP Address:
Security Protocol:
Alert:
2401
AP2
AP1
User Network Device
2204
2203

Figure 24

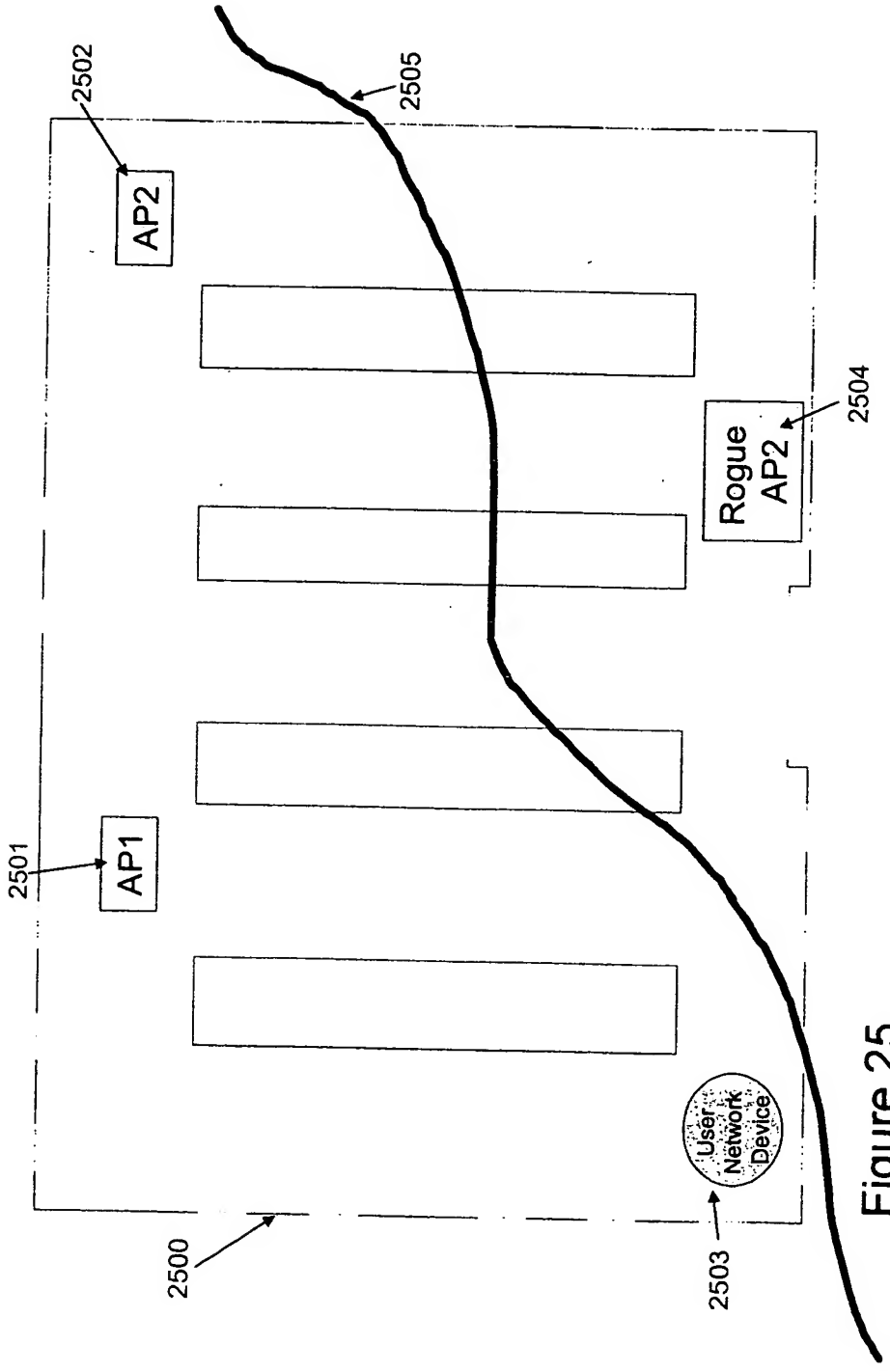

2502
2505
AP2
2504
Rogue
AP2
2501
AP1
User
Network
Device
2500
2503

Figure 25

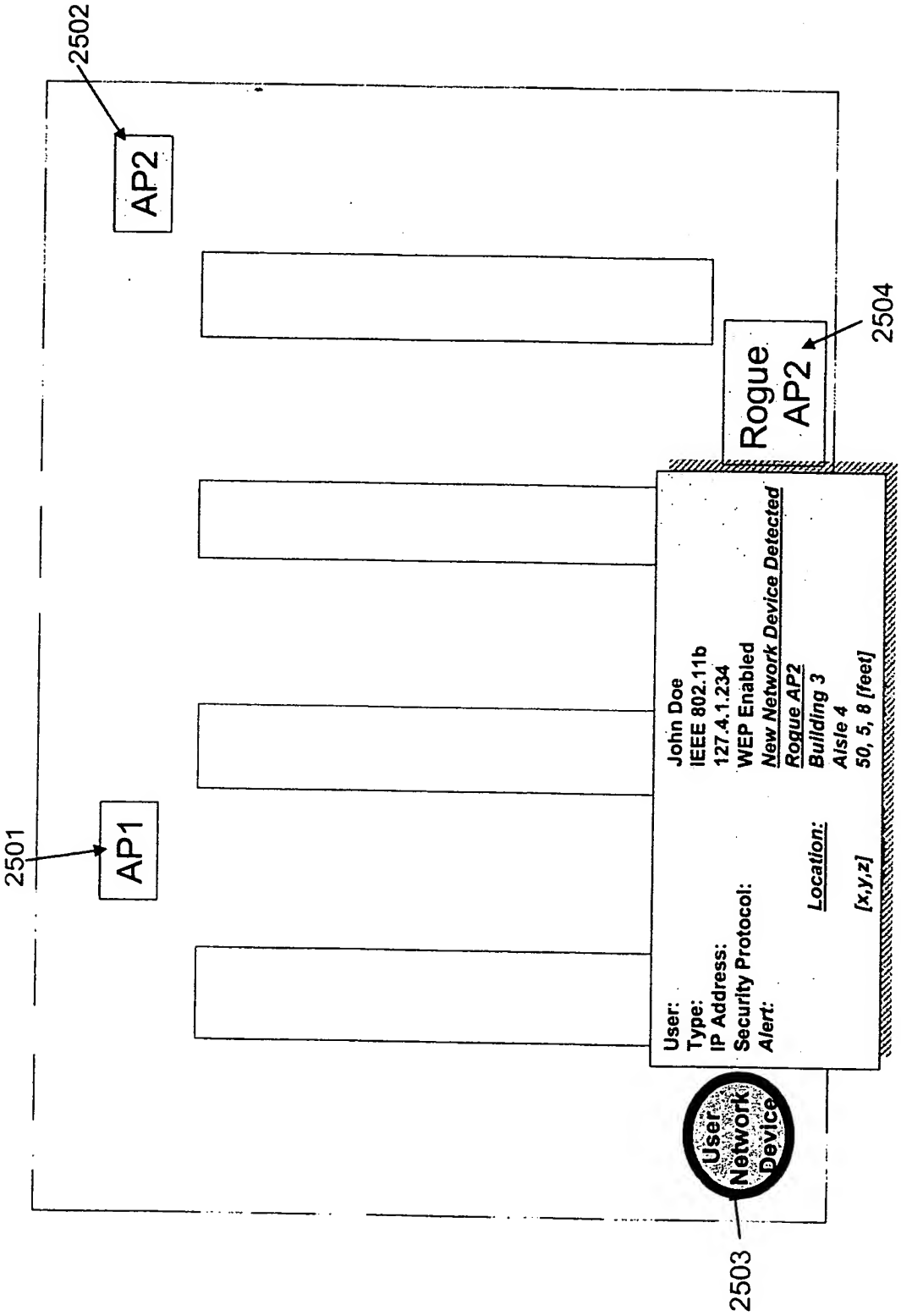

2502
AP2
Rogue AP2
2504
2501
AP1
John Doe
IEEE 802.11b
127.4.1.234
WEP Enabled
New Network Device Detected
Rogue AP2
Building 3
Aisle 4
50, 5, 8 [feet]
User:
Type:
IP Address:
Security Protocol:
Alert:
Location:
[x,y,z]
User Network Device
2503

Figure 26

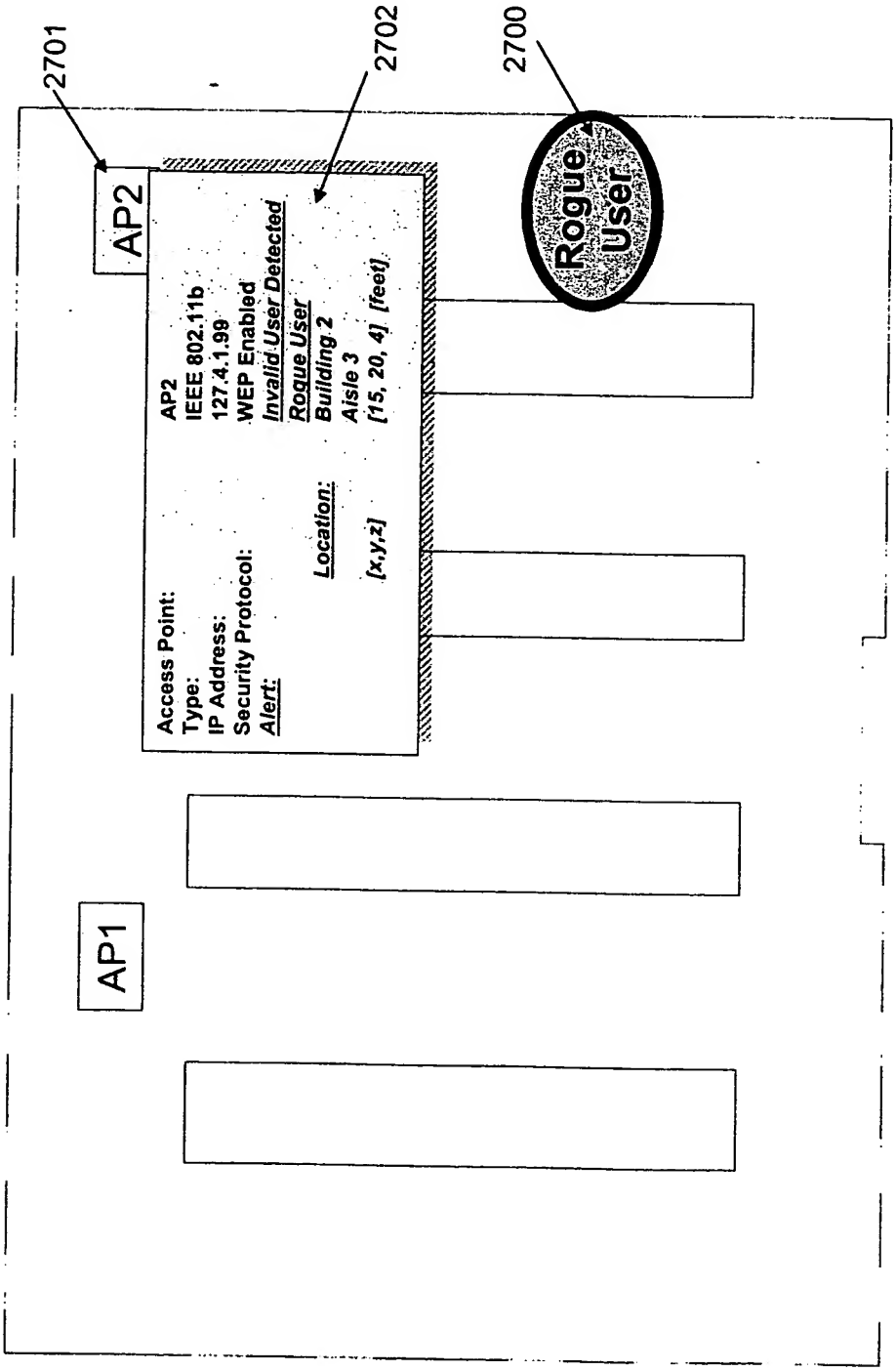

2701
2702
2700
AP2
Rogue User
AP2
IEEE 802.11b
127.4.1.99
WEP Enabled
Invalid User Detected
Rogue User
Building 2
Aisle 3
[15, 20, 4] [feet]
Access Point:
Type:
IP Address:
Security Protocol:
Alert:
Location:
[x,y,z]
AP1

Figure 27

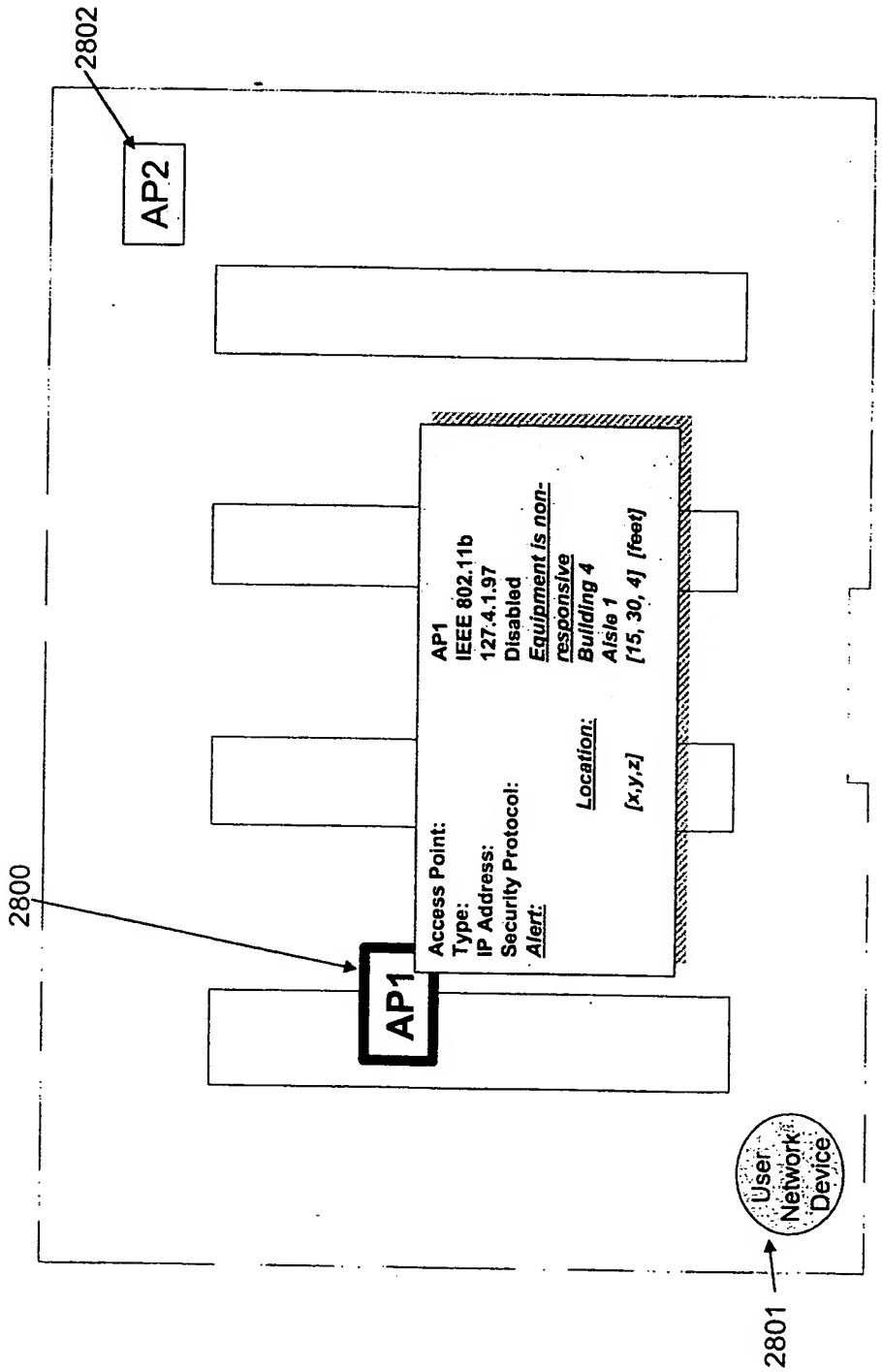

2802
AP2
2800
AP1
Access Point:
Type:
IP Address:
Security Protocol:
Alert:
AP1
IEEE 802.11b
127.4.1.97
Disabled
Equipment is non-responsive
Location:
Building 4
Aisle 1
[15, 30, 4] [feet]
[x,y,z]
User Network Device
2801

Figure 28

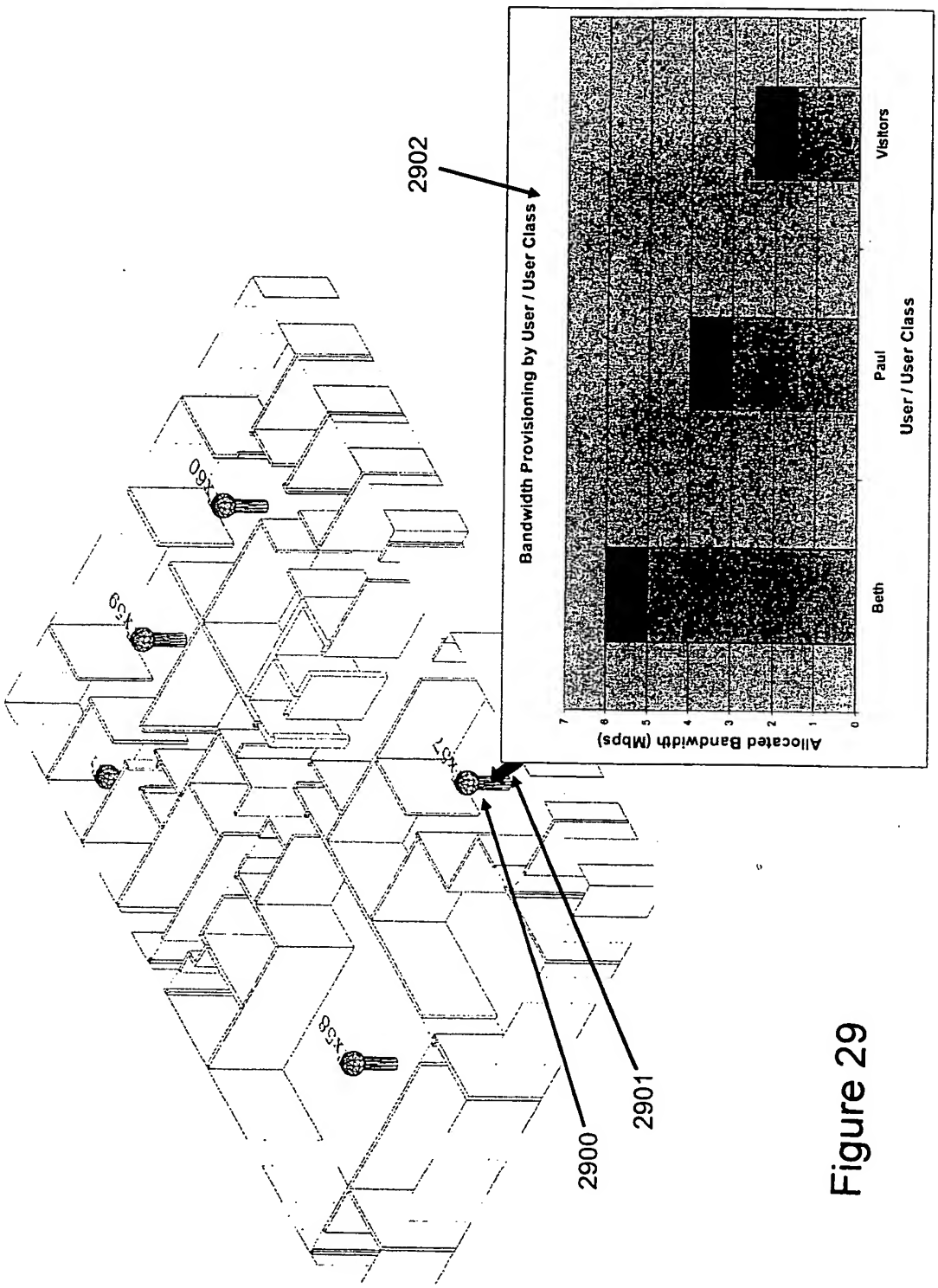

2902
Bandwidth Provisioning by User / User Class
Allocated Bandwidth (Mbps)
0
1
2
3
4
5
6
7
Beth
Paul
Visitors
User / User Class
160
159
157
158
2900
2901

Figure 29

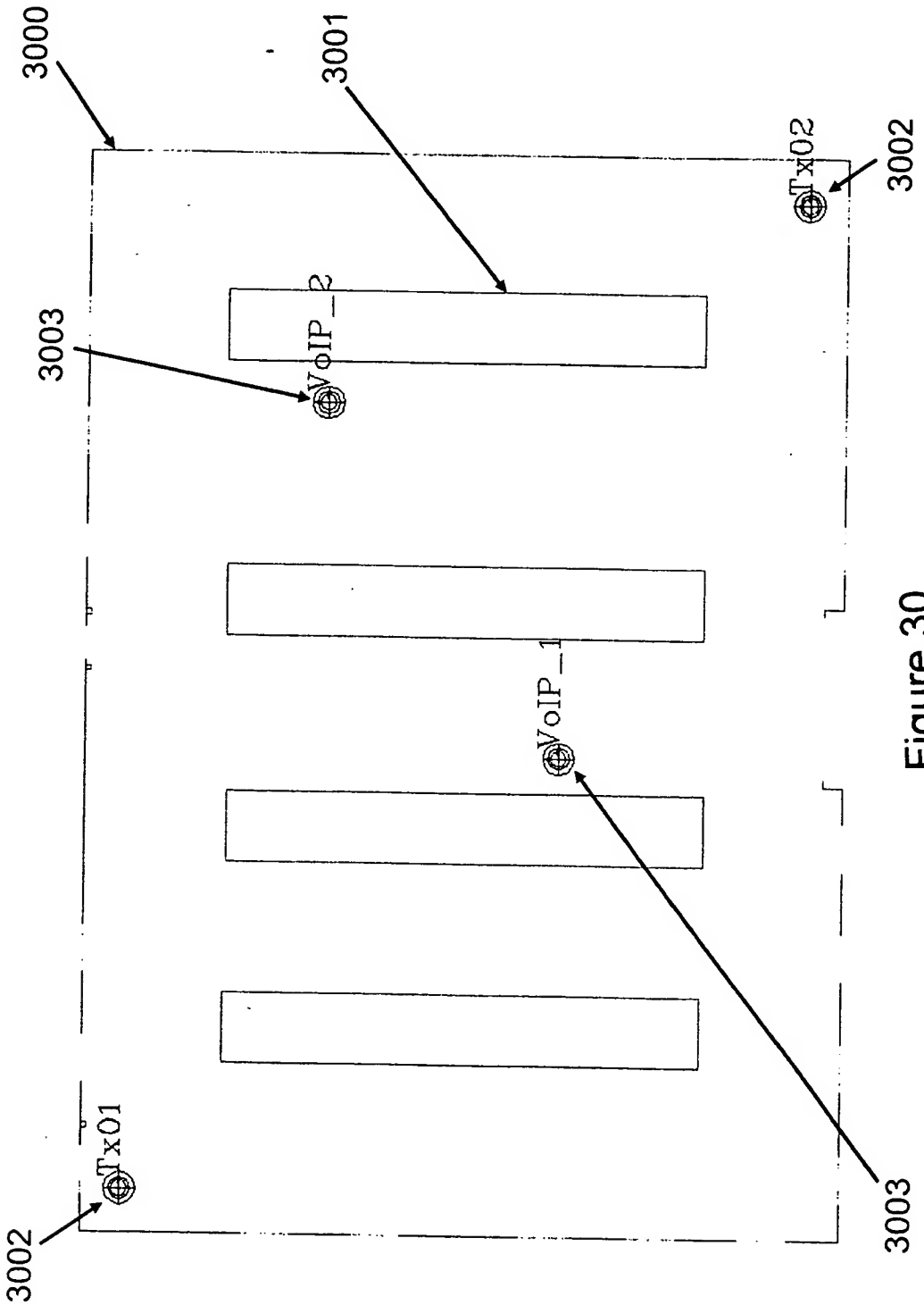


Figure 30

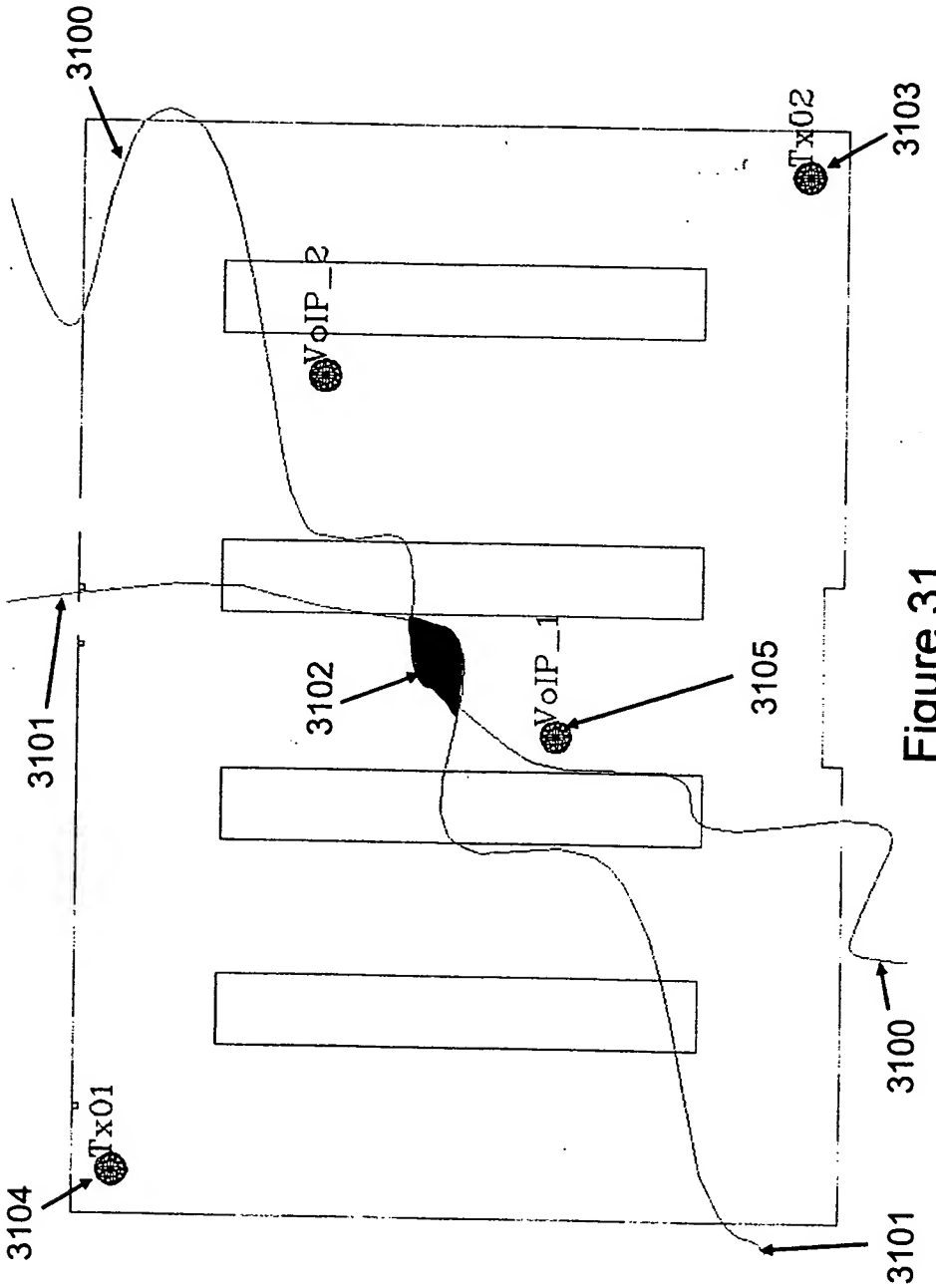

3100
Tx02
3103
VoIP_2
3101
3102
VoIP_1
3105
3104
Tx01
3100
3101

Figure 31

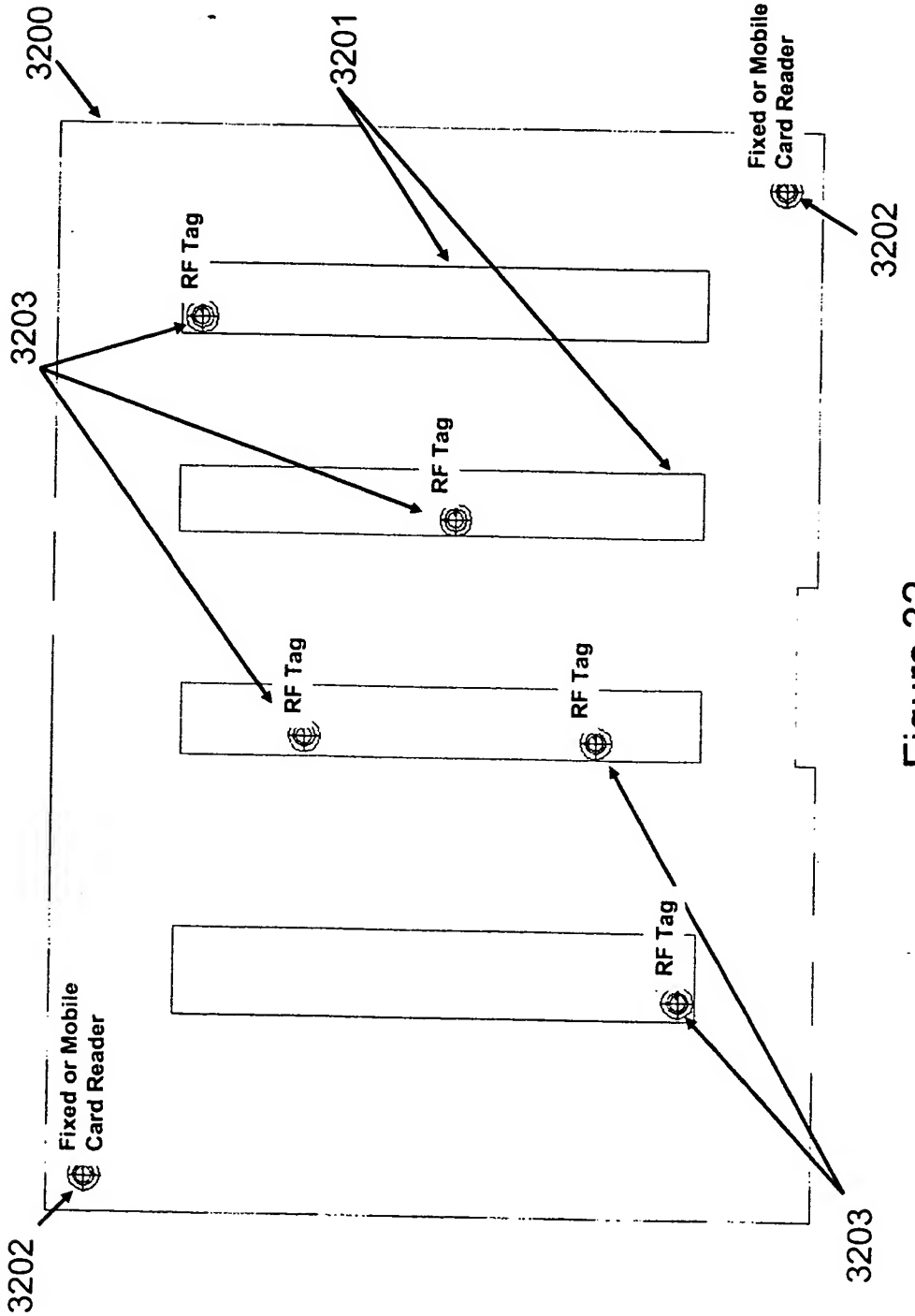

3200
3201
Fixed or Mobile
Card Reader
3202
3203
RF Tag
RF Tag
RF Tag
RF Tag
RF Tag
Fixed or Mobile
Card Reader
3202
3203

Figure 32

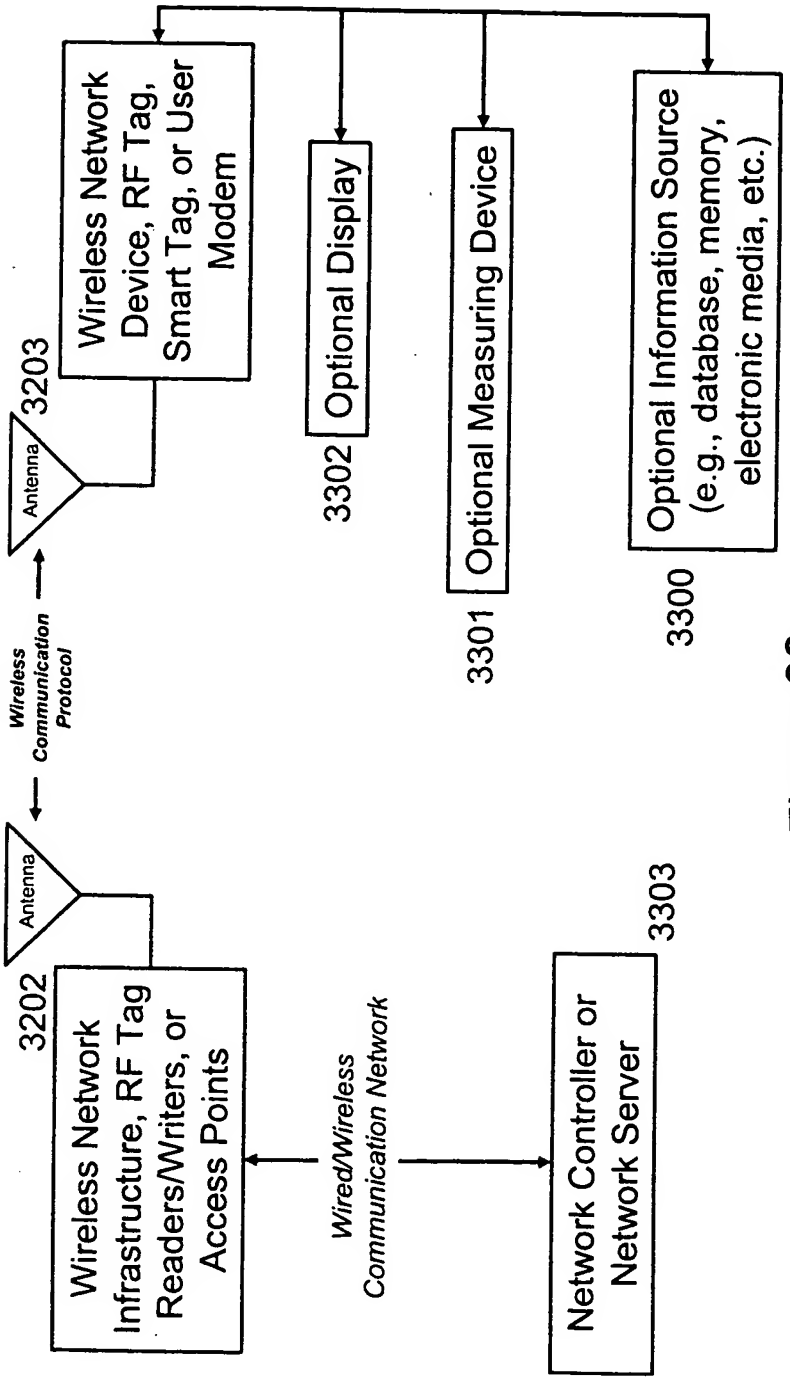

Wireless Network Infrastructure, RF Tag Readers/Writers, or Access Points
3202
Antenna
Wireless Communication Protocol
Antenna
3203
Wireless Network Device, RF Tag, Smart Tag, or User Modem
Wired/Wireless Communication Network
Network Controller or Network Server
3303
3302
Optional Display
3301
Optional Measuring Device
3300
Optional Information Source (e.g., database, memory, electronic media, etc.)

Figure 33

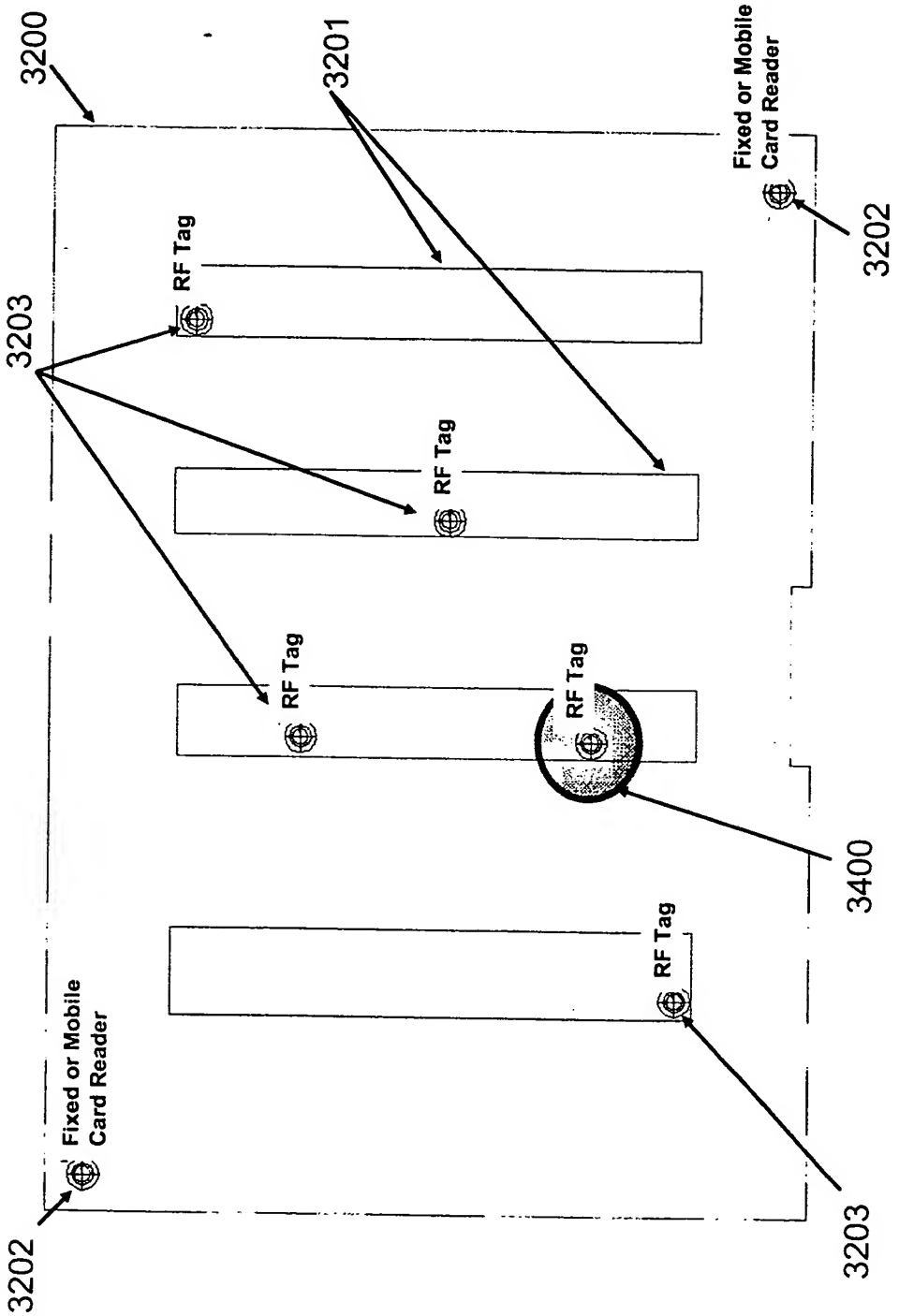

3200
3201
Fixed or Mobile
Card Reader
3202
3203
RF Tag
RF Tag
RF Tag
RF Tag
RF Tag
3400
3203
Fixed or Mobile
Card Reader
3202

Figure 34

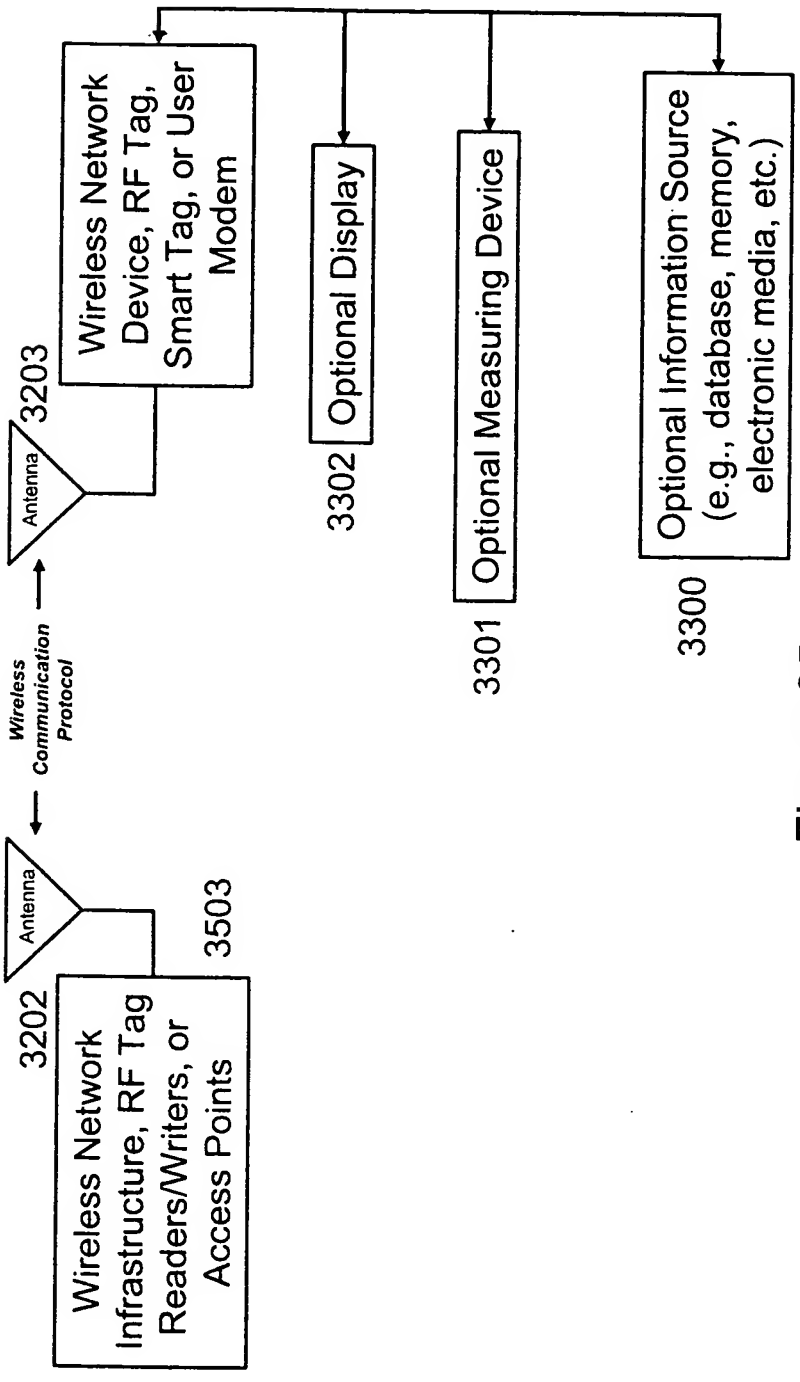

Wireless Network Infrastructure, RF Tag Readers/Writers, or Access Points
3202
3503
Antenna
Wireless Communication Protocol
Antenna
3203
Wireless Network Device, RF Tag, Smart Tag, or User Modem
3302
Optional Display
3301
Optional Measuring Device
3300
Optional Information Source (e.g., database, memory, electronic media, etc.)

Figure 35

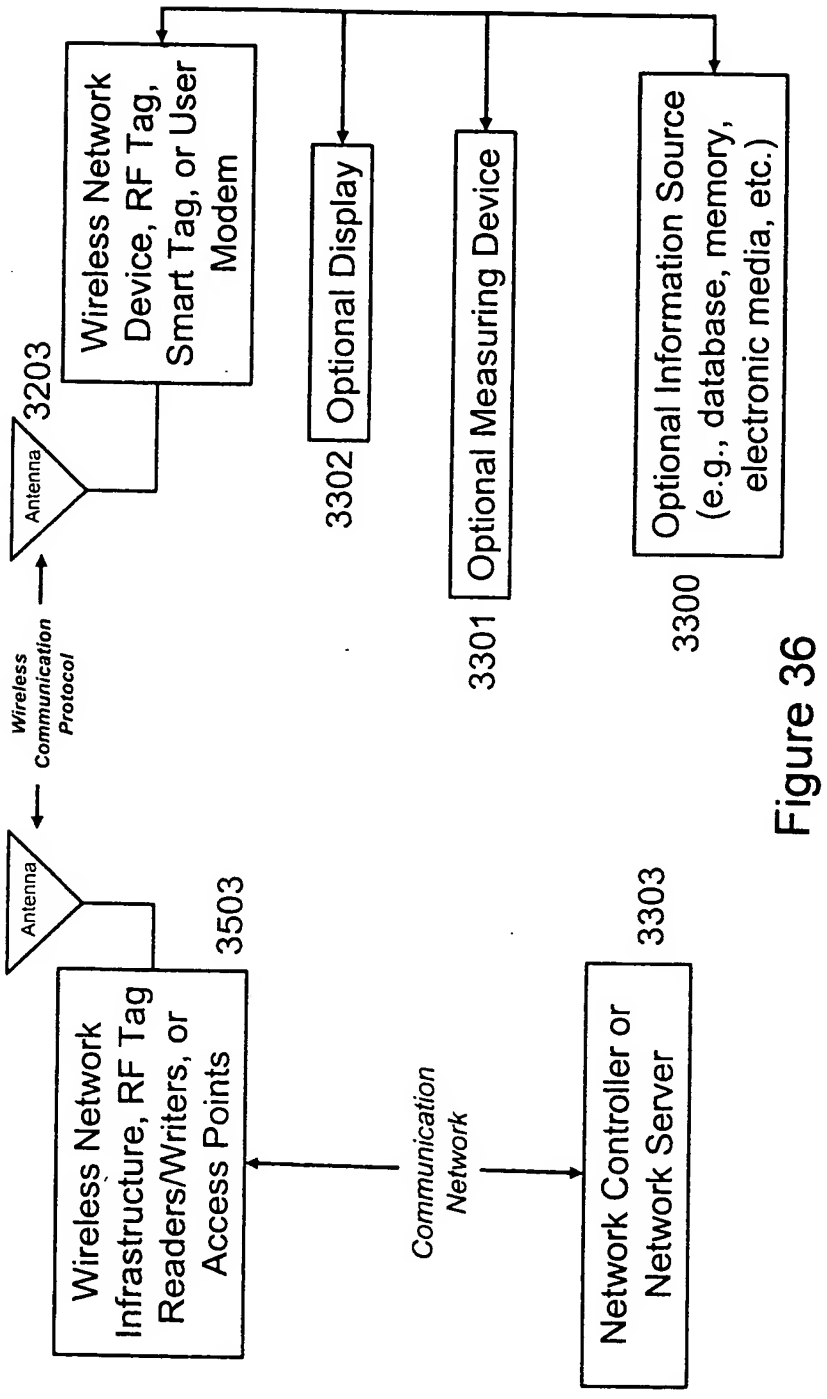

Wireless Network Device, RF Tag, Smart Tag, or User Modem
3203
Antenna
Optional Display
3302
Optional Measuring Device
3301
Optional Information Source (e.g., database, memory, electronic media, etc.)
3300
Wireless Communication Protocol
Antenna
Wireless Network Infrastructure, RF Tag Readers/Writers, or Access Points
3503
Communication Network
Network Controller or Network Server
3303

Figure 36